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ABSTRACT

The author conceives of the human emotional system as being composed of three functions of motivational stimuli: (a) the attitudinal or emotional, (b) the reinforcing, and (c) the discriminative controlling function which the stimuli acquire. He defines and describes each of these functions and their effect on integrated learning principles. He discusses the use of his concept of human behavior on techniques of behavior modification and behavior therapy. The limitations and inadequacies in present learning theories are pointed out and the implications this way of examining behavior has for theoretical analysis of instrumental behavior are suggested. A bibliography is supplied. (JY)

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LANGUAGE, PERSONALITY, SOCIAL, AND CROSS-CULTURAL STUDY AND MEASUREMENT OF THE HUMAN A-R-D (MOTIVATIONAL) SYSTEM

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Social Behaviorism, Human Motivation, and the Conditioning Therapies

Arthur W. Staats

Technical Report Number 2

August 1969

PRINCIPAL INVESTIGATOR:
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ABSTRACT

A learning theory of human motivation is considered to involve (1) the manner in which stimuli of various kinds come to elicit emotional (attitudinal) responses in the individual through the principles of classical conditioning. This concerns the *A* function of the stimuli in the individual's motivational system. The second function of the stimuli in the motivational system, given to the stimuli as a result of the attitudinal function, is that the stimuli will serve as reinforcing stimuli for the individual. This concerns the *R* function of the motivational system. In addition to this, stimuli that have the *A* and the *R* functions will also have a third function for the individual. Such stimuli will elicit (or control) behaviors. That is, as soon as a stimulus comes to elicit a positive emotional response through classical conditioning the stimulus will thereby acquire the power of controlling instrumental responses in the individual that approach the stimulus. The converse is true for negative *A*-*R*-*D* stimuli.

The implications of this learning theory are elaborated in the context of presenting a theory of human motivation. The theory of human motivation is then employed to better understand a number of areas of importance to personality study, including an understanding of abnormal behavior in terms of the *A*-*R*-*D* (motivational) system and the present and potential roles of behavior therapy and behavior modification in dealing with personality problems.

I. INTRODUCTION

In recent times interest in learning applications to clinical psychology has increased sharply. In contrast to the opposition generally evident only 5-10 years ago clinical psychologists in growing numbers have begun applying learning principles and procedures to specific problems of behavior. These contemporary developments, however, have in general constituted primarily piecemeal empirical operations with little theoretical content of any kind. It is suggested that the major reason for this is that the traditional learning theories require revision and development before they can serve very well as a theory of human behavior (personality). As a consequence of the inadequacies of the basic learning theories and their associated general methodologies (philosophies), the clinical applications, while an improvement over other treatments in many cases in addition to being atheoretical, have been circumscribed, have not exploited the potentialities of a learning approach, and have other inadequacies that will be more fully described.

In various areas of the study of personality theory and its clinical and social extensions, there is the need for the development of an improved learning theory. The present paper will indicate some of the lines to follow in filling the need. Most basically, it will be suggested that the interrelations of classical and instrumental conditioning must be elaborated, and the principles of learning extended through the use of observations and concepts of the clinic as well as those of the social and behavioral sciences. Moreover, detailed stimulus-response analyses must be made of various complex human repertoires. In this way theoretical structures for dealing with complex human behavior may be developed. The present concern is also to elaborate more fully a learning approach to a conception of human motivation, as part of a theory of personality, and to indicate how the conceptualization can serve as a theoretical framework within which to treat better some of the techniques and findings of behavior therapy and behavior modification.

First, however, it is illuminating to consider briefly some of the characteristics of other learning approaches to personality theory and clinical psychology. Early interest in the extension of learning theory to clinical problems was shown by Dollard and Miller (1950) and Mowrer (1950). While both endeavors, especially the former, were very productive and very influential in later developments, they shared a common defect. The full power of a learning conception of human behavior was not realized; rather the learning principles were applied as an adjunct to a psychoanalytic theory of human behavior. The full break was not made--the break where the basic personality theory is a learning theory and the naturalistic observations and concepts of the clinic are used to develop further the basic theory. Furthermore, conditioning procedures tended not to be employed in treatment, instead, traditional psychotherapeutic methods were suggested. It should be noted, however, that in the present view these early theoretical efforts were correct in realizing that the laboratory principles of learning by themselves do not constitute a theory of personality (human behavior).

Even more recently learning approaches have been applied to clinical problems in another way. That is, learning principles and conditioning procedures have been applied to specific behavioral problems or treatment in a straightforward empirical manner. Most investigators in this development have made no attempt to establish a general learning theory of personality and of problems of human behavior. The concern has been with treating specific overt problems of human adjustment. Actually this straightforward empirical learning approach has had two aspects, each of which developed independently. One has been called behavior therapy and the other behavior modification.

Investigators in the area of behavior therapy have drawn their primary learning theory foundation from Hull (1943). The part of behavior therapy to be discussed herein will involve the use of classical conditioning procedures. It should be noted, however, that behavior therapy has dealt with instrumental conditioning as well. Perhaps because of the lack of distinction of the two types of conditioning principles in the basic learning theory, behavior therapy has generally not distinguished classical and instrumental conditioning procedures. Theorizing in the area of behavior therapy has been largely restricted to manipulating some of Hull's intervening variables in deriving principles to treat various specific behavior disorders. While empirical results of behavior therapy have been compiled in several sources (Eysenck, 1960; Franks, 1964; Ullman & Krasner, 1965), there has been an almost total lack of elucidation of a learning theory of personality. Eysenck, for example, one of the originators of modern behavior therapy and a very positive influence in the spread of this approach has had a constitutional theory of personality (Eysenck, 1952, 1957, 1960), and has been critical of the present author's learning conception of human behavior for ignoring biological interpretations (Eysenck, 1965).

Similarly, the work to apply instrumental conditioning principles and procedures to behavior problems, in its contemporary form called behavior modification, has remained almost entirely on an unsophisticated empirical level. The first straightforward application of instrumental conditioning principles to abnormal behavior (Staats, 1957) dealt with simple behaviors. Behavior modification studies which followed this approach (see Aylion and Michael, 1959) have continued in this pattern--within the context of an operant conditioning methodology and a Skinnerian philosophy of psychology. Contemporary work has remained restricted to this mold, when it is no longer necessary to do so, and is only beginning to move again toward more advanced developments in a learning conception of complex human behavior. Adoption of Skinner's atheoretical experimental analysis of behavior philosophy has had the effect of limiting applications of the various learning concepts and various experimental findings. The functional-analysis, operant conditioning approach has also led to such misguided efforts as creating a huge Skinner box for research with a single person under total environmental control. Less dramatic, but with a more devastating effect has been the impetus toward a narrow, specific view and a disregard of the observations, concepts, and findings available from naturalistic observations and from nonlaboratory clinical, social, and behavioral sciences.[1]

In essence, thus, the presently popular operant conditioning approach and also that of behavior therapy, while containing principles and procedures that are crucial parts of a learning theory of personality and of clinical psychology, have been largely restricted to dealing with separate instances of relatively simple behaviors. Learning principles alone do not constitute a theory of human behavior--normal and abnormal, child and adult, individual and group--of the type that must underlie a comprehensive human behavior theory and its treatment procedures. It is suggested that while learning principles must be basic in the theoretical structure--not a secondary consideration--they must be employed to develop a general theory of human behavior. This general personality theory is the structure into which the learning clinical psychology must be fitted. Then the methods and rationale of clinical treatment will be derived from the structure. While the theory must be based upon laboratory principles, not accepting other personality theories as a superstructure, the laboratory principles themselves do not constitute the whole theory. The theory must be a human learning theory involving (a) selection of a consistent set of 'heavyweight' learning principles from among the confusion of experimental and theoretical products available, the selection of the principles being determined by the events to which the theory is to be applied. That is, it is in considering human behavior that the perspective for the selection of learning principles and for elaborating their interrelationships is gained. (b) Theoretical efforts must also be expended to integrate the principles in the basic theoretical set, and to elaborate their interrelationships, using a terminological convention that reflects the interrelationships (see Staats, 1966, 1968a, and following discussions). (c) It is necessary to extend the set of learning principles to comprehensive S-R considerations of various areas of complex human behavior. In this task it is the author's strategy that the observations and concepts of the behavioral and social sciences, including those of the clinic, must be incorporated into the approach (see Staats, 1963, 1964a, 1968a,b). Although not all of these naturalistic concepts may prove productive or acceptable by operational definition, it is in these areas of study that the most systematic observation of human behavior has occurred, In these three tasks of developing and elaborating the personality theory, the traditional learning theories and their associated philosophies of psychology will not suffice.

The author has called his general approach social behaviorism to characterize the emphasis on constructing the basic learning theory explicitly to serve as a foundation for the study of personality (see Staats, 1968, in press), as well as the emphasis on joining the learning theory to the observations and concepts of the social and behavioral sciences as well as those of clinical psychology (Staats, 1963, 1964a, 1968a,b, in press).

Having sketched these general points, the present paper will outline a conception of human motivation that exemplifies the points of the approach. After presentation of the theoretical structure, an area of investigation within the field of clinical psychology (aspects of behavior therapy and behavior modification) will be incorporated into the analysis--with mutual enhancement of the clinical areas and the theory, and with implications for further development.

II. INTEGRATED LEARNING PRINCIPLES[2]

As the author has indicated (Staats, 1966, 1968a) the field of learning has been separatistic. It has been dominated by theoretical conflict between the traditional viewpoints. This has led to the expenditure of major efforts in developing and maintaining separate experimental methods, separate general (philosophical) methodologies, and separate terminologies, even when the empirical referents involved the same principles. The separation has extended even to the empirical level where investigators have tended to work either with classical or instrumental conditioning. This has been followed on the human level where, for example, until recently, behavior therapy and behavior modification were quite separated.[3]

The various results of the already mentioned separation cannot be dealt with here. However, it is relevant to indicate that theoretical orientations prevalent in learning have prevented us from realizing the various interrelationships between classical and instrumental conditioning. To begin, Hull (1943) did not differentiate between the basic principles of classical and instrumental conditioning. Perhaps because of this Hüll did indicate the relationship of conditioned stimulus value and conditioned reinforcement value. Later approaches, although distinguishing the principles better, in other respects produced an even less effective basic approach to human learning. Thus, Skinnerian theory is nominally a two-factor (classical-instrumental) learning approach. However, he has over emphasized the separation of the principles and has given a separate terminology to the principles, where quite separate symbols are used for classical and operant conditioning. This has helped prevent the recognition of the interrelationships of the principles (Staats, 1964b, 1966, 1968a). In his system operant conditioning has been by far the focus of study and has been given overriding significance.

Thus, operant conditioning theory has almost entirely neglected classical conditioning in basic research as well as in extensions to complex human behavior. In operation, then, Skinner's approach has been a one-factor learning theory, especially in the realm of complex human behavior--a crucial weakness.

Moreover, Skinner's rejection of the theoretical endeavors of Hull and others, although correct in part in the context of that period, has had the effect of generally suppressing theoretical endeavors in learning. This has prevented elaboration on a theoretical level of the basic learning principles and their interrelationships. Skinner's approach has also rejected detailed stimulus-response theorizing, a crucial drawback which, again, has retarded detailed theoretical analysis of complex human behavior. Because Skinner has not had a clear view of what theory is, his philosophy of science has prevented his followers from developing along theoretical lines. The present article cannot deal generally with these topics, however, they will be reflected in the analysis to follow.

In beginning the present analysis and in demonstrating the approach, it is necessary to outline the basic principles to be employed, and their interrelationships, in a notational system which reflects those interrelationships. First, it may be said that many stimuli have both classical and instrumental functions. That is, for example, there are stimuli that can function as a ${}^{UC}S$ when paired appropriately with a ${}^{C}S$. These stimuli will elicit responses which will be conditioned to the ${}^{C}S$. In addition, however, the same stimulus that functions as a ${}^{UC}S$ may also function as an unconditioned reinforcing stimulus or a ${}^{UC \cdot R}S$. That is, the same stimulus presented after an instrumental response will result in the response becoming stronger on future occasions, or remaining strong if it is already in good strength.

There are many such stimuli. Food will serve as a ${}^{UC}S$ and elicit the salivary response, among other emotional responses. Food will also serve as a ${}^{UC\cdot R}S$, and will strengthen instrumental behaviors when presented in a response-contingent manner. Although this is readily apparent, its implications have not been seen, perhaps because of our separatistic traditional theoretical terminology which symbolizes an unconditioned stimulus as ${}^{UC}S$ and a primary reinforcer as S^{R}. Furthermore, in textbooks and lectures the principles are presented separately so the interrelationship is obscured.

This defect in traditional learning theories becomes even more important when the topic of learned or secondary (conditioned) reinforcement is considered (as well as discriminative stimulus control). This topic may only be considered when it is realized that stimuli may have multiple functions in classical and instrumental conditioning. That is, it was suggested that food as a stimulus functions as a ${}^{UC}S$ and as a reinforcing stimulus ${}^{UC\cdot R}S$. It may also be suggested that a new stimulus when paired with usch a stimulus in a classical conditioning procedure actually acquires both functions. That is, the new stimulus will become a conditioned stimulus and elicit (at least in part) the emotional responses that the unconditioned stimulus elicits. In addition, however, as a consequence of this conditioning the new stimulus will become a conditioned reinforcing stimulus, or ${}^{C\cdot R}S$. Hull (1943) also suggested that the secondary reinforcing value of a stimulus was due to the fact that it had come to elicit a conditioned response. (It should be realized that the pairing operation may actually occur in many situations. In operant discriminative training, for example, food is paired with a discriminative stimulus. Thus, the discriminative stimulus ${}^{D}S$ should come as part of this training to be a ${}^{C\cdot R}S$. Operant conditioning in general may be said to involve the classical conditioning of reinforcement value since any time a ${}^{UC\cdot R}S$ (or ${}^{C\cdot R}S$) is presented the emotional responses it elicits will be conditioned to any other stimuli that are present).

It may be noted that it would be expected that higher-order conditioning could also be involved in the formation of conditioned reinforcers. That is, when a conditioned reinforcing stimulus, ${}^{C\cdot R}S$, is paired with a new stimulus, the latter will also become a ${}^{C}S$ as well as a ${}^{C\cdot R}S$. This by no means completes the integrated learning analysis. However, it does present several concepts that are of importance to a learning theory of attitudes and human motivation. An additional elaboration of the interaction between classical and instrumental conditioning will be made later. More complete accounts of the author's integrated analysis are given in Staats (1961, 1963, 1964a, 1966, 1968a). Recent accounts also are beginning to deal with some of the interrelationships between classical and instrumental conditioning (see Rescorla & Solomon, 1967; Trapold & Winokur, 1967) in a manner which supports relevant parts of the theoretical formulation.

III. INTEGRATED LEARNING PRINCIPLES AND HUMAN MOTIVATION THEORY

The author has already described parts of a learning analysis of the attitudinal system (Staats, 1963, 1964a, 1968a,b) which will be systematized and extended here. It should be noted that because of traditional categorization schemes and the multiple functions of "motivational stimuli," such stimuli are referred to by different terms such as emotions, values, instincts, needs, drives, motives, goals, cathexes, reinforcers, urges, utility (economics), fetishes, evaluative word meaning, and so on, in addition to the term attitudes. The distinctions set up by demarcating such terms and areas of study constitute artificial barriers to the comprehensive study of human behavior. The present analysis is thus thought to apply to these various terms. It is suggested that the study of attitudes--formation, change, and function--in its broad context is the study of human motivation.

Generally, the naturalistic observations and conceptions of these various aspects of human "motivation stimuli" are not couched in terms of empirical principles that are precisely stated and "causative" in the sense that variables are indicated by which to affect (or manipulate) human behavior. The laboratory-established principles of learning, on the other hand, are relatively precise, detailed, and "causative." When the two are combined, based upon the empirical principles, the result is a theory concerned with significant, functional, human behavior, but with the potential for making empirical predictions and producing control of (solutions to) human problems. The present section will present a conception of the human motivational system which will describe the three functions of motivational stimuli: (a) the attitude or emotional (classical conditioning), (b) the reinforcing, and (c) the discriminative controlling functions which such stimuli acquire. The human motivation system may be referred to as the attitude-reinforcer-discriminative (A-R-D) system, thus naming the triple functions of the stimuli included in the system. The first two functions will be treated at length initially and the third later.

A. The Formation and Change of the Attitude-Reinforcer-Discriminative System

Many of the theories of the social and behavioral sciences which are based upon naturalistic evidence have recognized that attitudinal stimuli are subject to variation within an individual and between individuals. This has been true even when the concept is of a biological sort, such as Freud's; that is, in his view an investment of body energy is made in the object, giving the object its motivational characteristics. However, while such psychodynamic theories have recognized that objects can change in their motivational functions for a person (in psychoanalytic terms the investment of energy (cathexis) can shift from object to object, increase and decrease, and so on) the means by which these changes (or the effects) occur are not clearly stated in terms of empirical principles. It is suggested that naturalistic observations of long-and-short-term shifts in individual and gro group "motivational stimuli," and the like, may be handled in greater detail by the employment of a learning analysis. Moreover, as will be described in part, when the learning analysis is employed it suggests means by which human behavior can be predicted, measured, and modified.

The important principle for discussing the *formation* of the individual's A-R-D system is that of classical conditioning, not operant conditioning. That is, as has been described there are stimuli that naturally have functions as unconditioned stimuli (^{UC}S). Food, water, air, sexual stimulation, warmth, and so on, elicit upon presentation positive "emotional" responses (when the organism has been deprived of them). On the other hand intense tactile, auditory, visual, and chemical stimuli, elicit negative "emotional" responses. When these various stimuli are paired with neutral stimuli, eliciting their particular emotional response, the emotional response is classically conditioned to the neutral stimulus. When a stimulus has come to elicit an emotional response it may be defined as an attitudinal stimulus. This is an important quality that some stimuli can have or acquire, that is, the function of eliciting an emotional or attitudinal response. When a stimulus has acquired this quality, it can be transferred to new stimuli with which it is paired in the process of higher-order conditioning.

Thus, it is suggested that the individual's A-R-D system is founded upon the stimuli that originally elicit emotional (attitudinal) responses in him on an unlearned basis, and elaborated by extensive first-order and higher-order classical conditioning. The individual's conditioning history in this respect is infinitely complex and extends over his life history--ample opportunity for a fantastically large number of conditioning trials and all the uniqueness we see in the human attitudinal system. It is also important to note that the A-R-D system differs not only from person to person, but also from small group to small group: by social class, by nation, and by culture. And, finally, language plays a central role in the classical conditioning formation of individual and group differences in the A-R-D system (see Staats, 1964b, 1968a,b), as the author has demonstrated in a series of studies.

It should be pointed out that in the naturalistic situation the fact that a classical conditioning process is involved in the establishment of an attitudinal response to a stimulus may be obscured. The presentation of the original attitude stimulus, the $^{UC\cdot}R_S$, may be contingent upon some instrumental response, producing instrumental conditioning. The process may thus appear simply as an instrumental conditioning situation even when the more important result is to make a stimulus present in the situation a new conditioned stimulus and consequently a new conditioned reinforcing stimulus $(^{C\cdot}R_S)$. An example from everyday life may be seen when the parent applies reinforcing verbal stimuli (that elicit positive emotional responses) contingent upon the cooperative play behavior of two siblings. This would have the effect of strengthening the motor response. In addition, however, the positive attitudinal response elicited in each base by the "social" approval would be conditioned to the other sibling as a social stimulus. In both laboratory and naturalistic (and clinical) situations the investigator may be misled by the appearance of an instrumental conditioning procedure and fail to realize that a classical conditioning process is just as essentially involved.

It may be added that the principles of classical conditioning are empirical and are known in great detail. As a theory they improve markedly upon the naturalistic concepts of the formation and alteration of attitude stimuli. And, as will be shown, by drawing upon the observations of the clinic and other social and behavioral sciences it is possible to invest the classical conditioning analysis with greater significance. Moreover, a great deal of information about individual and group behavior is given when the nature of the individual's or the group's attitudinal system is known. The principles involved in this case are those of instrumental conditioning, and the account thus begins to deal with the *function* of attitude stimuli.

B. The Reinforcing Function of the A-R-D System

Traditionally, the study of attitudes has concentrated upon attitude formation and change and the measurement of attitudes. The principles involved in the function of attitudes have been assumed, or based upon naturalistic expectations rather than experimentally derived principles. It is suggested, however, that systematic study must be made of the instrumental function of attitude-eliciting stimuli.

In outlining this approach, a short description of the manner in which the attitudinal system determines one's instrumental behaviors will first be given, beginning with an example from the animal laboratory. Let us say that we have two rats of the same biology. One of them, *rat A*, we subject to training in which a buzzer is presented many times, each time paired with food, in what constitutes classical conditioning trials in an instrumental situation (see Zimmerman, 1957). *Rat B* receives experience with the buzzer, but not paired with food. It would be expected that the buzzer would become a positive attitudinal stimulus for *rat A*, but not for *rat B*. Now let us individually place each animal into the *same* instrumental learning situation involving a lever which when pressed results in the brief sound of the buzzer. We will see that *rat A* will be an enthusiastic learner; he will come to press the bar actively, but *rat B* will not. The *difference* between animals, however, would rest solely upon the fact that for one organism the stimulus has acquired a reinforcer function--would be an attitudinal and thus motivational stimulus--while for the other it has not.

Using the same analysis, we can see how different behaviors will be formed in children with different A-R-D systems in situations important to child adjustment. Some children are raised in such a manner that some stimuli will elicit attitude responses in them while other children lack the necessary conditioning experience. It has been widely recognized (see, for example, Rosen, 1956; Maccoby & Gibbs, 1954) that differences in the "value" of various events is affected by social class and familiar training circumstances. Middle-class children ordinarily are rewarded many times for learning new skills of various kinds. The products (stimuli) resulting from learning new skills (achievements) should thus come to elicit positive attitudes and consequently serve as conditioned reinforcers. It may be added that through similar conditioning experiences the approval of adult "authority" figures can also come to be a strong positive reinforcer for some children.

With these givens it is not difficult to see how child learning, for example, classroom learning and adjustment, may be affected by the A-R-D system. The approval of the teacher and other students and the product of one's own developing skill are among the most important sources of reinforcement for 'student' behaviors in the traditional classroom. In a manner analogous to our two animals, let us say that two children with differing A-R-D systems are placed in the classroom. For one child, child A, the teacher's approval and the child's own achievements are reinforcing; for the other, child B, these stimuli are not reinforcing. Let us say that they receive the same treatment in the class. Whenever they pay attention to materials the teacher presents and respond in the manner directed they receive the teacher's approval, and their instrumental behaviors produce stimuli that evidence their skill (achievements). Under such a circumstance, child A's attentional and working behaviors will be maintained in good strength and as a result he will continue to develop new skills. Child B's behavior, on the other hand, will not be maintained. His attentional and working behaviors will wane, and other competitive behaviors that are strengthened by stimuli that *are* effective reinforcers will become relatively dominant.

Child A will be seen as interested, motivated, hardworking, and *bright*. Ultimately, he will also measure as very able and bright on class, achievement, and intelligence tests. Child B will be seen as disinterested and dull, and possibly as a behavior problem if problem behaviors are reinforced. Later he will also measure this way and this evidence may be used to support the contention that the child's behavioral failure was due to some personal defect. It may be suggested that many problems of school adjustment which are important for psychology involved deficient or defective A-R-D systems (see Staats & Butterfield, 1965). It may be stated generally that 'normal' behavior will only emerge from a situation which has a fixed set of stimuli supposed to have A-R-D qualities only when those stimuli actually *do* have those qualities. When 'normal' behavior does not emerge from the situation we have to scrutinize the A-R-D system of the individual *and the A-R-D system in effect in the situation*.

Many other examples may be given that involve behaviors important to human adjustment. Let us take two adult males one of whom has come to find other males to be strong sex reinforcers because of his conditioning history; that is, males elicit positive sexual attitudes in him. For this individual females do not have as strong sexual reinforcing properties. Let us say, also, that the other adult male in this example has an A-R-D system that is just the reverse. These two individuals, placed in the same life situation, will be likely to develop two quite opposite sets of sexual behaviors.

Behaviors (and mannerisms) that are successful in attracting and gaining contact with males will be strengthened in the first case. Behaviors that are successful in attracting and gaining contact with females will be strengthened in the second. The same analysis would also hold for other aberrations in sexual behavior. The person for whom children elicit sexual attitudinal responses and have sexual reinforcing value is likely to develop behaviors that are strengthened by sexual contact with children. The person for whom pain and violence are positive sexual reinforcers will be likely to develop instrumental behaviors that culminate in such events.

In addition, certain aspects of neurotic and psychotic behaviors can be considered in terms of abnormalities in the individual's A-R-D system, for example, neurasthenia or simple schizophrenia. (Later discussions will elaborate these points.) Fetishes may also be considered to involve cases where because of the individual's conditioning history an object has come to have strong sex reinforcing value for an individual to an extent that is unusual in comparison to other individuals. It should be noted that these are only examples. Many other abnormal behaviors can be considered in terms of an abnormal A-R-D system and the instrumental conditioning that is consequently affected.

It is important to add also by illustration that the A-R-D system can also suffer impairments because stimuli have come through conditioning to elicit negative attitudinal responses and act as negative reinforcers thus resulting in behavior disorders. In the area of sex behavior, for example, aberrant behaviors will be produced if the stimuli that must become positive attitudinal stimuli and sex reinforcers are instead, through conditioning, made into negative reinforcers. When this occurs, of course, behavior that takes the individual away from the stimuli will be strengthened. This will make it impossible for the individual to acquire the instrumental behaviors necessary to obtain the reinforcement that otherwise would be available.

This is the same principle that is involved in phobias, irrational fears, anxieties, and so on. That is, while the presence of a phobia (where a stimulus inappropriately elicits a negative attitudinal response) may be of importance in and of itself because of the unpleasant quality of negative emotional responses, or because of an effect upon health, it is important to note that the effect upon the individual's adjustive instrumental behaviors may be of even greater importance. For example, a strong negative attitude to being outdoors will result in the behavior of staying inside. When one is _forced_ (by one's classical conditioning history and instrumental behavior principles) to remain indoors various types of social interactions are ruled out, one's occupational success may be ruled out, sexual reinforcement may suffer, and so on. The individual's poor life adjustment in which lessened positive reinforcement and increased negative reinforcement occurs, may result in further unfortunate development of the A-R-D system and thus additional problems.

It should also be indicated that groups of people can differ from each other in their A-R-D systems. Following the above analysis this would result in different types of behavior coming to be dominant in the group. That is, for example, if a group has a reinforcement system in which success in competition is a strong positive reinforcer, then this will serve to make behaviors that culminate in such success dominant in that culture. If success in competition is less positive, or even negative, then fewer examples of such instrumental behaviors will develop. Much description in sociology and anthropology can be considered in terms of differences in the A-R-D system between groups, subgroups, cultures, and so on. Many times it is important to the treatment of social problems to describe the A-R-D system of subgroups in our own society. Through this type of description, an understanding of the causes of undesirable behaviors may be gained, and possibilities of prevention and treatment may be suggested by the analysis. Thus, many of the aspects of problem behaviors of the children we now call culturally deprived arise from social conditions that prevent the development of an A-R-D system that is appropriate for the conditions to which they are subjected. This has, of course, been true for American Negroes in various ways. For example, when the social situation prevents the positive attitudinal stimuli of 'success' from being paired with the stimuli of hard work, acquiring skills, intellectual achievement, educational status, and so on, these latter stimuli will not acquire positive attitudinal, and thus, reinforcement value. In addition, when a group within the larger group has been discriminated against in various aversive ways, this will also constitute negative attitudinal conditioning for the individuals involved. By verbal means, involving the principles of classical conditioning of meaning and attitudes (see Staats, 1961, 1964b, 1968a; Staats & Staats, 1958), this conditioning can be passed to other individuals. When there is a consistent aversive experience of a subgroup culture presented by members of the larger group, the reinforcement system of the subgroup will come to include strong negative attitudes toward members of the larger group. This will affect the extent to which members of the larger group can serve as positive social reinforcers of the behavior of members of the subgroup. For example, the member of the subgroup who interacts with a member of the larger group in a learning situation, such as the case where the member of the larger group is a supervisor, therapist, or a teacher, will respond 'atypically' if the member of the larger group elicits negative attitudinal responses and, as will be described, thus controls avoidance and oppositional behaviors.

The applications of the learning theory of human attitudes to problems of human behavior, and to a general conception of human behavior, cannot be exhausted in this paper. The preceding discussion attempts only to indicate some of the potentialities, and, by the examples chosen, to indicate that the realm of attitude study is concerned with various types of human behavior--from theoretical to applied areas--even though the behaviors are not traditionally included in the study of attitudes. In order to spell out some of the additional implications of the concept of the A-R-D system, the straightforward learning principles require additional elaboration, which will be the concern of the next sections.

C. The Hierarchical Nature of the A-R-D System and Its Functions

Additional conceptions within psychology and the other social and behavioral sciences can be employed in the further development of the learning theory of attitudes (human motivation). Maslow (1954), as one example, has suggested that one's needs (or in the present terms one's attitudes and reinforcers) are ordered in terms of strength. When the strongest 'needs' are satisfied, then the next strongest becomes prepotent, and so on. Another example of a social science principle which lends itself to a hierarchical conception concerns the law of diminishing (marginal or extra) utility, from economics (Samuelson, 1958, p. 430). This states that "the more the individual has of some given commodity (in the present terms, a reinforcer), the less satisfaction (or utility) he would obtain from an additional unit of it Ulmer, 1959, p. 319 ."

The present concept of the A-R-D system may be elaborated by characterizing the system's 'hierarchical' nature, and by outlining some of the laboratory principles that would be expected to be involved, again utilizing naturalistic observations and conceptions. To begin, it may be suggested that the A-R-D system is a system because the elements in the system have modes of 'interaction,' one of which is involved in the hierarchical nature of the system. At any moment in time the various stimuli in the individual's system would be expected to have relative reinforcing intensity. Relative, as well as absolute, strength would have an important effect upon the individual's or group's behavior.

Let us say, for example, that two individuals have a stimulus in each of their 'reinforcer systems' that has precisely the same reinforcing value, reinforcer A. Let us also say, however, that for one individual there are no stronger reinforcers in his system while for the other individual there is another stimulus, reinforcer B, that is an even stronger reinforcer. Now let the individuals be placed in a situation in which both reinforcers are available, but one reinforcer is presented contingent upon one instrumental behavior, and the other reinforcer is presented contingent upon an incompatible behavior. Under these circumstances the two individuals will develop different behaviors. The individual with the reinforcer system in which reinforcer B is the most 'dominant' reinforcer will develop most dominantly the behavior that is followed by that reinforcer. The other individual with the system in which reinforcer A is relatively stronger will develop predominantly the other behavior. It is thus suggested that it is not only the absolute value of reinforcers that determines individual and group differences in behavior,but also the relative values of the various reinforcers in the A-R-D system.

One corollary should be added here. It appears that there are subsystems within the major system. That is, there are classes of reinforcers that are related. Take sex reinforcers for example. It may be suggested that there are many different individual sex reinforcers which constitute a class, and probably there are subclasses within the class. Certainly, food reinforcers constitute another class of the A-R-D system (with subclasses also). When one is deprived of food, as an example, it would be expected that the whole class would be increased in reinforcing value. If the strongest food reinforcer in the hierarchy is not available, then the next strongest would be the dominant available reinforcer. The model would suggest that a relatively weak member of a class of reinforcers could be raised into a position of relative dominance in the total system through deprivation of stronger members of its class. A man deprived of potable fluids might be more affected by some brackish water than by a usually stronger reinforcer in some other class of reinforcers such as sexual reinforcers, food reinforcers, social approval reinforcers, and so on.

Several other specifications may be indicated here in elaborating the conception. The relative strengths of the reinforcers in the system may be changed by first-order or higher-order classical conditioning experiences. This conditioning may be of the usual variety, or it may involve incompatible conditioning; that is, a stimulus that has come to elicit one attitudinal response will no longer do so (or not to the same extent) when an incompatible emotional response is conditioned to the stimulus. This has been called counterconditioning. In addition, the relative strengths of reinforcers in an individual motivational system may be changed by extinction procedures. These two processes may require a number of conditioning (or extinction) trials in any case, and thus may develop slowly. Also, once a stimulus has come to elicit an attitudinal response thus being a reinforcer, it will remain so unless further conditioning or extinction procedures produce a change.

D. Deprivation and Satiation and the A-R-D System

In addition to these enduring and slowly acquired processes of change in the relative (and absolute) strength of reinforcers in the motivational system, there are also operations that can change the system more rapidly, usually with a less permanent effect. That is, deprivation operations also increase the reinforcing strength of a positive reinforcing stimulus in an absolute sense. Satiation, on the other hand, decreases the strength of a reinforcing stimulus. In both cases the operation can be expected to change also the relative dominance of reinforcers in the system. When the condition of deprivation or satiation is returned to the starting point, however, the reinforcers will regain their former relative position--the changes produced directly follow the deprivation--satiation variations.

The manner in which groups and individuals can vary in behavior because different stimuli are effective in their A-R-D systems has already been discussed. A few examples will be given here where the relative (hierarchical) ordering of the A-R-D system is affected by deprivation--satiation variations, producing variations in behavior. As an example, adult social reinforcement may occur in small portions for the housewife with several small children. As a result of this deprivation this class of social stimuli may increase in reinforcement value to a far greater extent than is the case with her husband. He, being satiated on social reinforcers because of his work situation, finds spending evenings at home more reinforcing; she finds social events more reinforcing. As another example, deprivation of sex reinforcers would be expected to increase the reinforcing value of this class of stimuli, at the expense of other reinforcers in the individual's system. For the adolescent under this type of deprivation other reinforcers may be relatively weak and the behavior maintained by those reinforcers--study, reading, family activities--may weaken.

Deprivation--satiation also causes attitudinal differences in social groups. While experiencing less deprivation for sex reinforcers, the lower economic classes on the other hand suffer much more deprivation of material reinforcers such as money, fine clothes, cars, and so on, as well as more deprivation of social reinforcers such as prestige, social approval, and so on. Juvenile delinquency and criminality have been considered by the author in terms of a partial statement of this principle (Staats, 1963), and this and other aspects of the present approach recently have been employed in another analysis of criminal behavior (Burgess & Akers, 1966).

It is important to indicate that deprivation may also affect the A-R-D system, and thus behavior, in another way that does not emerge from consideration of laboratory learning principles. For example, when a prisoner is deprived of contact with the opposite sex, the general class of sex reinforcers will increase in relative strength. As a consequence, reinforcers of lesser value in the class, but which are more accessible, such as homosexual contact, will be relatively stronger and may instrumentally condition behavior that would be unlikely to occur without the deprivation. It should be emphasized that in this way each instance of a homosexual act constitutes a whole series of classical conditioning trials since a sexual act extends over a considerable length of time. The homosexual conditioning experience would be expected to increase the sexual attitudinal value of the class of social stimulus involved--members of the same sex--thus further altering the structure of the A-R-D system on a more permanent basis.

E. Rules of Application of Reinforcers and the A-R-D System

It was said in introducing the present paper that the straightforward statement of learning principles does not constitute a theory of human behavior, even when the principles have been demonstrated with simple human behaviors. It is necessary to extend the basic principles into the realms of human behavior of interest to the behavioral and social sciences. In doing this the naturalistic observations and the concepts they have yielded must exert a prominent influence in the theory construction task. New principles not suggested in the laboratory may be expected to emerge from extending the laboratory principles in the analysis of the complex circumstances of human life.

Examples of this have already been presented in the preceding analyses, but it will help to elaborate this methodological suggestion by more pointed examples of the ways that basic principles alone are inadequate. As one illustration, the relationship between the basic principles may not be seen in the laboratory because one is concerned about isolating the principles and studying them independently. The relationship of the principles, on the other hand, may be very important when dealing with complex human behavior. The relationship between the attitudinal-reinforcing value of a stimulus and its discriminative stimulus value, yet to be discussed, is such an example.

It is also the case that effects which are difficult to produce in the laboratory because of limited numbers of conditioning trials, and the like, may take place readily and importantly in real life where conditioning opportunities may be unlimited. The principle of higher-order conditioning is such an example. Furthermore, certain conditions or principles may be an irrelevant part of laboratory manipulation and yet be very significant when the principles or conditions are extended on a theoretical--empirical level to the study of man. The hierarchical nature of the reinforcement system and the principles involved, for example, unlike the case on the human level, are not crucial in the animal laboratory. The present section will be concerned with describing another such case relevant to the present theory.

To begin, in the laboratory there is a certain 'rule' in existence when the principle of reinforcement is studied. The rule involves what behavior the investigator elects to reinforce and in what manner (e.g., schedule of reinforcement). In the rat he will reinforce bar pressing behavior, or running down a runway, or turning in one direction in a T maze; in the pigeon he will reinforce pecking a key, or a key of a certain color, and so on. The behavior is selected for various practical reasons relevant to laboratory work: to be specifiable objectively, naturally occurring, simple enough to be treated as a unit, of limited duration enabling repeated trials, and so on.

This aspect of the principle of reinforcement, which only has practical importance in the basic study, involves some of the most significant matters in the study of human organization. Independently of what attitudinal stimuli serve as reinforcers for a particular group or culture, there can be differences between groups in the rules by which the reinforcers are applied. The ways that groups differ in this respect, the ways that these differences develop and change, and the effects that are produced on human behavior may be seen as primary topics of study for scientific and professional areas concerned with man. A few examples indicating the important of the rules of applying reinforcers will be made.

As one illustration, in our society some of the stimuli that have a good deal of reinforcing value are titles, positions, status roles, social and personal attention, acclaim and respect, money, fine clothes, expensive cars and houses, and various honors and awards. In our society, there are also rules (not necessarily formal or explicit) for the application of these stimuli. That is, they (or tokens which can be exchanged for them) are delivered contingent upon some kinds of behavior but not upon others. Thus, large amounts of these stimuli are delivered contingent upon exceptionally skilled baseball, football, acting, dancing, or comic behaviors, among others. Relatively small amounts are delivered contingent upon the behaviors of skilled manual work, studying, unskilled manual work, nursing, and many others.

These characteristics of our reinforcing system and its rules of application, to continue with the example, have an effect upon the manner in which behavior in our society is shaped. Consider, thus, a boy who has two classes of skilled behaviors, one a set of intellectual skills consisting of knowledge and well-developed study and scholarly work habits, and the other consisting of some form of fine athletic prowess. Let us say that either behavior could be developed to 'championship' caliber. Now, in a situation in which the societal rule is that the larger amount of reinforcement is made contingent upon the one behavior, this behavior will be strengthened, and as must be the case, at the expense of the other to the extent that the behaviors are incompatible. In our society, of course, many of the strongest reinforcers are more apt to be more liberally applied to athletic rather than scholarly behavior.

When groups are considered, it would also be expected that the reinforcer system and its rules of application will determine the types of behaviors that are dominant. A society that has a differing set of reinforcers and rules will evidence different behavior over the groups of people exposed to that set of conditions. A society, for example, whose reinforcers are made contingent upon scholarly behaviors to a larger extent than another society will create stronger behaviors of that type, in a greater number of people, than will the other society. In general, many of the different cultural, national, class, and familial behaviors that have been observed in sociology, anthropology, clinical and social psychology, and other behavioral sciences, can be considered to involve this aspect of human motivation--the A-R-D system and its rules of application.

It should be indicated that sometimes the rule specifies a particular behavior-social stimulus-reinforcement relationship. Thus, sexual behavior and sexual reinforcement occur in all societies. However, the rules regulate the type of behavior and the type of social stimulus. Thus, in our culture, sexual behavior will be reinforced but only in certain situations with certain people. People such as siblings, parents, children, same sex partners, unwilling partners, and so on are excluded. We also have many examples of cultures and subcultures with markedly different rules, for example, the ancient Greek, Roman, Hawaiian, and Egyptian cultures, homosexual groups, marital 'switching' clubs, and so on.

It may be added that there are also rules for the application of negative reinforcers as well as positive and these can differ for families, subcultures, and cultures. For example, a family has rules by which certain behaviors are punished. A group or a society also does. Many rules concerning the application of negative reinforcers when the behavior or social stimulus involved is inappropriate are made explicit in the form of legal or religious laws. Certain behavior-social stimulus-reinforcement relationships are relatively likely to be heavily controlled by laws, as occurs in the area of sex. These rules concerning negative and positive reinforcers may also be called mores or values or norms in the social sciences.

The experimental, social, or clinical psychologist who is interested in human behavior must go to the social and behavioral sciences and their naturalistic observations of man for information concerning these important matters. It may be suggested, however, that the concepts and the principles of the basic science serve as the theory within which to understand and extend the naturalistic observations and concepts. Thus, the theory of human behavior does not emerge from the basic laboratory principles themselves (as some philosophies of psychology would imply, for example, Skinner's "experimental analysis of behavior" methodology), nor from the naturalistic observations themselves.

F. The Controlling (Goal) Function of the A-R-D System

There is another aspect of a learning theory of attitudes and human motivation that also involves a principle that does not emerge from the laboratory, but which has antecedents in the naturalistic observations and concepts of clinical psychology and other social sciences. The author has in part described this principle elsewhere (Staats, 1963, 1964a, 1968a,b). The analysis requires an integration of the principles of classical conditioning, conditioned reinforcement, and discriminative stimulus control. The analysis provides the principles with which to treat the D (discriminative) aspect of the A-R-D system.

The laboratory study of the principle of reinforcement has been largely concerned with the reinforcing effect of reinforcing stimuli. It should be noted that the effect of a reinforcing stimulus occurs when it is presented after some response, and the effect involves strengthening future occurrences of that behavior. The reinforcing function of a stimulus is not defined by the ability of the stimulus to control (or bring on) instrumental behavior. The traditional learning theories did not explicitly make the point. Consequently, many investigators have not understood this definition clearly or followed it in their research with humans. Thus it is not uncommon to see a study in which the reinforcing value of a stimulus is increased by the experimental manipulation; but the effect is measured by the increase in the instrumental behavior the stimulus elicits, not by an increase in its reinforcing function. Although the stimulus has never been presented as a reinforcer, contingent upon the behavior studied, the effect is erroneously discussed as if it was due to the reinforcing action of the stimulus. Bandura, Ross, and Ross, (1963), for example, make this theoretical error in an otherwise valuable paper.

This is an easy confusion, however, for there has not been an appreciation by laboratory investigators of how conditioned stimulus and reinforcing value are inextricably intertwined with discriminative stimulus value when studying or treating complex human behavior. Clinical and social theories, on the other hand, while at times recognizing the multiple functions of motivational stimuli, have not clearly defined the functions or indicated the operating principles. Newcomb (1950, p. 80) and Klineberg (1954, p. 76), as examples, discuss motives as including states of drive, as well as directing behavior toward some goal. Norms and values play the same role in sociology referring to control of behavior and to satisfaction, and these functions are ordinarily not clearly distinguished (Johnson, 1960, p. 50). Freud, as another example, posited that an instinct has both an aim and a particular behavior for attaining the object that satisfies the aim and reduces the tension of the instinct.

In the laboratory, on the other hand, the several functions of stimuli have been clearly seen, but the relationship has not been adequately stipulated. (Hull suggested that the concept of motivation or drive had both an "energizing" and "guiding" function, with the concept of anticipatory goal response also relevant, but the learning theory was not developed to serve as a basis for a theory of human motivation, or human behavior in general, and the theory serves poorly in this role. Skinner has not treated the interacting function of stimuli.)

Actually the analysis of the "rewarding" and "goal" functions of reinforcing stimuli is complex. It may be reduced for a summary account, however. To begin, the sensory stimuli of an object or event that also has a reinforcing quality are likely to come to control behaviors that approach or avoid the stimuli. As an example, when a child sees a food stimulus, if he crawls toward the stimulus this response is followed by obtaining the stimulus, which is a reinforcement. This process fulfills the requirements for making a stimulus a discriminative stimulus; that is, a stimulus in the presence of which a response is reinforced will come to control the response.

This brief analysis must be expanded in human behavior in several directions. First, the child will learn a large class of "striving" behaviors that will come under the discriminative control of such reinforcing stimuli, for example, crawling toward, walking toward, running toward, climbing over and around obstacles, reaching and grabbing for, fighting and struggling for, asking, begging, and crying for, working for, wheedling for, arguing for, flattering for, being ingratiating for, being respectful for, as well as competing for in various ways.

In addition, the child's class of striving behaviors will come under the discriminative control of a large number of different reinforcing stimuli on the basis of his experience with those, or similar, stimuli. Thus, in the child's conditioning history a wide variety of stimulus objects that are reinforcers will come to control responses that result in obtaining those objects.

Furthermore, through various mediated generalization mechanisms, stimulus objects, with which the individual has previously had no direct conditioning experience will have the goal (discriminative) value immediately. This may take place through language, as one example. That is, after the word "food" has come to be a conditioned reinforcer (through classical conditioning) and also a discriminative stimulus for striving behavior, a new stimulus that is labeled by the word food will thereby immediately gain discriminative control. It may also be suggested, although the complete mediated generalization analysis will not be given here, that any stimulus that elicits a positive emotional or attitudinal response (any reinforcing stimulus) will also have to that extent discriminative stimulus value, the first time the stimulus is contacted. The principle is again that of mediated generalization (see Staats, 1968a, for a more complete analysis).

(It should be noted that although a stimulus will tend to control a wide number of striving responses, whether or not a response occurs will also be a function of other controlling stimuli that are present in the situation. For example, although a reinforcing stimulus may control "reaching for" and "asking for" behavior, the latter will be more likely to occur when there is another person present. As another example, a stimulus object that is labeled food will not control striving for behavior if it elicits a negative emotional response because of its visual characteristics.)

At any rate, it is suggested that the strength of the discriminative stimulus value will vary, in part, as a function of manipulation of the reinforcing value of the stimulus. Thus, the discriminative value of the stimulus will increase or decrease according to classical conditioning variables as well as a deprivation--satiation conditions.

The preceding analysis was made only for positive reinforcing stimuli. However, an analogous analysis can be made for negative reinforcing stimuli. Because of their effects on behavior negative reinforcing stimuli come to control "striving away from" or "striving against" behaviors, which would include a broad class of responses ranging from running away from through fighting, avoiding, arguing with, insulting, voting against, rating negatively, and so on.

It should be noted that in contrast to the laboratory situation, it is usually the discriminative control of instrumental behaviors that social and behavioral science investigators use to index motivational stimuli. The social psychologist, clinician, sociologist, or anthropologist, for example, ordinarily observes what people strive for (verbally or otherwise) when he studies attitudes or motivation. This is why he has so generally introduced the concept of goal directed behavior (while correct in certain respects is usually also teleological), and frequently has glossed over the principles of classical conditioning and reinforcement. The social theorist, or clinical theorist, does not see whether the receipt of a stimulus elicits an emotional response or whether it strengthens future occurrences of an instrumental behavior. In fact it would ordinarily be impossible to do so in view of the complexity of human behaviors studied or treated, the infrequency of their occurrence, the internal nature of the emotional responses, and so on. It is probably for this reason that the principles of the laboratory worker and those of the social scientist were not readily brought into a productive relationship in this important realm of study. More will be said of the effects of the discriminative functions of the A-R-D system in personality and abnormal behavior in the following sections.

G. Deficits and Inappropriacies in the A-R-D System

This section is intended to describe several additional characteristics of the A-R-D system which are implied in some of the preceding discussions but which should be specified and elaborated.

It has already been suggested herein that the individual's A-R-D system is formed on the basis of the classical conditioning of emotional responses in primary and higher-order conditioning. While the laboratory animal's conditioning history may run into a few hundred or a few thousand conditioning trials, it is important to note that for humans the classical conditioning history is infinitely greater. In considering this one should remember that unconditioned stimuli such as eating a dinner, engaging in the sex act, and so on actually involve numerous conditioning trials over an extended period of time. Any conditioned stimulus presented for an instant during that extended period will receive a conditioning trial. Moreover, any stimulus present during the whole interval will receive many, many conditioning trials. The same thing is true with respect to higher-order conditioning. There are opportunities for an infinite number of classical conditioning trials here which will result in development of the individual's A-R-D system. This can be seen easily on the verbal level, since one's language will contain many, many words which elicit positive or negative emotional responses. These words may then serve to make other stimuli into emotion eliciting stimuli when the words are paired with these stimuli (see Staats, 1968a). Even in one day such conditioning trials are legion.

The large number of conditioning possibilities, and the opportunity for an infinite variation in one's personal conditioing history, insure that there will be no precise similarity in A-R-D systems between individuals. The universals we look for in human behavior must be universals in behavior principles, not universals in the A-R-D system or the behaviors influenced by the system.

On the other hand, the similar conditions provided for individuals and groups in the conditioning histories would be expected to result in similarities, if not identities. Thus, it would be expected that families would ordinarily provide similar conditioning histories for their members in contrast to the conditioning existing between families. One would thus expect variation in A-R-D systems that would take place between families. The same would be true of many groups: peer groups, social classes, fraternities, social institutions like education, professions, clubs, readers of particular periodicals, newspapers, books, and so on. The experiences obtained from contact with each social grouping should result in conditioning which affects the formations of the A-R-D system. This is not to say that members of a grouping may not receive an atypical attitude conditioning history for that group. There are many circumstances under which this can occur.

The theory of the A-R-D system must be spelled out in greater detail in the context of its formation, its measurement, its effects upon social interaction, its relevance for additional topics of personality, and so on. (See Staats, 1968b, for additional specifications and implications in these areas.) One of the important areas of specification must be that of the abnormal develomment of the A-R-D system and the consequent effects upon the individual's emotional response and overt instrumental, behaviors. The section to follow will indicate some additional principles in these areas. First, however, it may serve to stress briefly again the three effects which an abnormal A-R-D system will have.

First, a conditioning history that is abnormal will affect abnormal emotional responses to stimuli with which the individual is confronted. Second, abnormal conditioning will result in abnormalities in the stimuli which will reinforce the individual. Third, abnormal conditioning will result in abnormalities in the stimuli for which the individual will strive for or against. Regardless of the type of abnormality in the A-R-D system, it should be remembered that there may be three effects. There will be an abnormal presence or absence of emotional responding to stimuli; this will make the stimuli abnormal in reinforcing power which will affect the individual's behavior, and the abnormal emotional value of the stimuli will abnormally control the individual's striving behavior.

1. Deficits in the A-R-D System

Examples of abnormal behavior have already been given in previous sections. The present discussion is meant only to indicate the general ways in which A-R-D systems may be abnormal--which needs additional specification. The present author (Staats, 1963) has suggested that many aspects of abnormal behavior can be considered in terms of deficits in behavior, or in terms of behaviors acquired which are inappropriate for the individual. It is important to make the general statement here that the A-R-D system also differs in these two dimensions. That is, the general principles are that abnormalities in conditioning history can provide individuals with an A-R-D system that has deficits such that stimuli which should elicit positive or negative attitudes do not do so; or the A-R-D system may be inappropriate such that stimuli which should not elicit an attitude response (either positive or negative) have come to elicit such a response.

The effect of either a deficit or inappropriacy in the A-R-D system may be shown in any one of the three functions of A-R-D stimuli. Thus, for example, one could consider deficits simply in terms of the fact that stimuli do not elicit emotional responses in an individual when they do in others. Thus, an individual attending a symphony concert for whom the music elicits no positive emotional responses misses the pleasure of most concert-goers. A person for whom a joke elicits no positive emotional response is in the same situation. A person who is not horrified by some horrible situation is considered callous or brutal.

In the reinforcing value characteristic of the A-R-D system, one has only to refer to the accounts of abnormal psychology textbooks to obtain abundant descriptions of individuals (and types) whose central difficulty is that stimuli which should be reinforcing to them, if they are to display certain behaviors, are not reinforcing. Take the case of the young neurasthenic housewife. She "has no energy" to do her housework. She is listless, depressed, and unable to apply herself to the tasks her life situation presents. She may become worried that something must be wrong with her and may seek medical or psychological help. The primary problem is frequently that there are inadequate sources of reinforcement to maintain the behaviors requisite for performing her new tasks as a housewife. As a young girl she may have had a conditioning history in which social events and social interaction of all sorts, attending school, studying for exams, recreational activities, and so on have come to be powerful reinforcers. However, staying alone in a house and going housework may not be reinforcing at all. The problem is not that the young housewife does not have the requisite motor skills. These could have been well acquired. However, without positive reinforcement for the behaviors, they will not occur. It will be observed, however, that when adequate reinforcers are available to the young woman, the listlessness will drop out, and active, energetic, behavior will be exhibited. Thus, a visit from a friend, a social event, and so on, will strengthen her behavior and show it is not a matter of a deficit in the instrumental behaviors that is involved, but a deficit A-R-D system for her life situation. (A more complete analysis of such a case would require greater specification of the A-R-D system and its manner of origin. In addition, the manner in which the individual will avoid social disapproval for the neurasthenic behavior through rationalizations and physical complaints, and so on, will also be important in the complete description of such difficulties.)

The behavior of schizophrenics many times involves deficits in the A-R-D system. The description of schizophrenics as indifferent, lacking interests, ambition, and so on refers to a lacking A-R-D system. Cases of antisocial personality may also be considered in terms of deficits in the A-R-D system. For example, it is frequently said that the psychopath cannot anticipate negative consequences, cannot profit from warnings, displays verbal remorse seemingly but without later behavior being affected, and so on. One of the things involved here would seem to be deficits in the verbal aspect of the individual's A-R-D system. That is, as has been mentioned, one of the prominent aspects of the A-R-D system is that the individual should acquire a very large repertoire of words which elicit either positive or negative emotional responses in him (see Staats, 1968a). Words such as dangerous must come to elicit a negative emotional response, serve as a negative reinforcer, and moreover serve to control appropriate avoidant behaviors or the individual's behavior will not be properly controlled. As another example, aberrant sexual behavior may also be considered in terms of the A-R-D system. That is, usual sexual behavior will only take place if usual sexual stimuli have become reinforcing for the individual.

It is not possible here to characterize briefly the principle that deficits in the A-R-D system will lead to behaviors described as abnormal. The author has given additional examples (see Staats, 1963, pp. 483-488);

however, a complete account of the role played by the A-R-D system in abnormal behavior is necessary. Actually what is needed is an abnormal psychology textbook in which the descriptions of abnormal behavior are analyzed in terms of learning principles. This discussion, however, along with the author's other analyses, do provide a method and examples of what would constitute a general learning conception of abnormal psychology.[4]

2. Inappropriate Aspects of the A-R-D System

Sometimes the way in which the A-R-D system deviates from normal is not in its deficits but in the fact that stimuli that should not elicit attitudes do so. Again, the abnormal behavior produced may reside in any of the three functions of A-R-D stimuli. Thus, as has been suggested, stimuli may elicit intense emotional responses in the individual which are injurious to the individual's health or happiness. Psychosomatic illnesses may in part be considered in these terms.

In addition, it has been suggested that when a stimulus inappropriately elicits an attitudinal response, it will serve inappropriately to strengthen or weaken an instrumental behavior that results in obtaining or avoiding the stimulus. Thus, the phobic emotional response to being out of doors is important because the individual learns to avoid the stimulus by the inappropriate behavior of remaining indoors.

Another effect of the inappropriate A-R-D system is that inappropriate striving for or striving against behavior will be elicited. The man who finds winning inordinately positive emotionally will strive for this state to an inordinate degree, perhaps to the detriment of his health or his social adjustment. The person for whom social stimuli elicit anxiety responses inappropriately will strive to avoid them, perhaps physically, or by some chemical means such as alcohol.

3. Interactions of Deficit and Inappropriate Aspects of the A-R-D System

It has already been indicated that there are interactions that take place in the A-R-D system as a result of deprivation circumstances. Thus, it was suggested that if the individual is deprived of the presence of a loved person it is likely that he will develop new individuals who come to elicit emotional responses in him and thus assume a more dominant role in the A-R-D system. As another example, it was suggested that a prisoner is more likely to develop homosexual reinforcers in his A-R-D system than he would be in society where he has access to heterosexual contact and is not under deprivation.

There is also a type of interaction that may take place between deficits in the A-R-D system and inappropriate aspects of the A-R-D system where a defect in one may lead to a defect in the other. That is, the person who simply has not learned appropriate heterosexual emotional responses is likely to learn to respond inappropriately to other potential sex reinforcers. Conversely, the individual who has already learned an inappropriate emotional sexual response to persons of the same sex is not likely to have experiences that would classically condition him to positive emotional responses to persons of the opposite sex. Actually, the mechanism by which these interactions take place involve the effects of the A-R-D system upon instrumental behavior, and vice versa, and the principles of these types of interaction should be described.

H. Interactions of the A-R-D System and Instrumental Behavior Repertoires

The primary thrust of this analysis has been to show that the nature of the individual's A-R-D system will heavily determine the type of instrumental behaviors he will display; thus, the A-R-D system is a determinant of what is called personality. It should be indicated, however, that there are additional interactions between the A-R-D system and the individual's instrumental behaviors and, moreover, the relationship between the two may go back and forth, each affecting the other and in turn being further affected by the changes it has produced in the other.

Thus, the individual who has deficits in behavior may not as a consequence gain positive reinforcement, the receipt of which in contiguity with other stimuli would produce additional development of his A-R-D system. For example, the male with deficits in social behavior may not be able to interact with normal women and thereby experience the sexual reinforcement necessary to develop his learned 'sexual' A-R-D system. As another example, certain deficits in behavior (e.g., the lack of intellectual or social skills) are punished socially, and the punishment may help produce an inappropriate 'social' A-R-D system.

On the other hand, the individual with unpleasant inappropriate behavior may be shunned as a result and thereby not obtain the social experiences necessary to prevent deficits in his A-R-D system.

It has already been indicated that deficits or inappropriacies in the A-R-D system can lead to deficits and inappropriacies in the individual's instrumental behavior. Thus, there are possibilities for elaborate sequences of interactions between the A-R-D system and the individual's instrumental behaviors.

An example may be helpful here, taken from a previously conducted case study (Staats & Butterfield, 1965). The case involved a culturally deprived juvenile delinquent who had severe deficits in such cognitive skills as reading. His case history suggested that the problem began in part because of an inadequate A-R-D system. In cases where the training is long term, such as school learning, adequate reinforcement must be available to maintain the attentional and work behaviors necessary for learning. However, the reinforcers present in the traditional schoolroom are inadequate for many children as occurred in the present case. Their attentional behaviors are not maintained, and they do not learn as a consequence.

In such a case there may be no learning disability involved. However, after a few years of school attendance where the conditions of learning are not appropriate for the child, he will not have acquired the behavioral repertoires acquired by more fortunate members of the class, whose previous experiences have established an adequate motivational system. Then, lack of skilled behavior is likely to be treated aversively. That is, in the present case, the child with a reading deficit (or other evidence of underachievement) is likely to be gibed at and teased when he is still young and ignored, avoided, and looked down upon when he is older. Although the individuals doing this may not intend to be aversive, such actions constitute the presentation of aversive stimuli. Furthermore, this presentation of aversive stimuli by other "successful" children, and perhaps by teachers, would be expected to result in further learning, but learning of an undesirable nature. These children, teachers, academic materials, and the total school situation can in this way come to elicit negative attitudes in the child with the motivational and thus behavioral deficits.

This, in line with the present theory, sets the stage for further unfortunate developments. That is, as has been suggested, the attitudinal value of stimuli controls a whole class of striving for or against behaviors, depending upon whether the attitude is positive or negative. The behaviors in either class will depend upon the learning history of the individual. In the present case the juvenile delinquent had previously learned a large class of hostile-aggressive behaviors. Thus, when the school and its occupants became negative attitude stimuli, he responded with various undesirable behaviors. He baited teachers, cursed in school, scuffled and fought with other students, and so on. He was punished for this, which can be considered further classical conditioning that would intensify his negative attitudes toward school. The intensity of his conditioning may be seen in other undesirable behaviors of this child also. That is, he was apprehended for vandalizing a school. Again, this would be expected to lead to further punishment, to additional negative attitude conditioning, and to the elicitation of additional undesirable behavior.

It can be expected that in many cases vicious cycles of interaction can occur in which the defective A-R-D system leads to undesirable behaviors which lead to further defective developments in the A-R-D system, which again produce additional undesirable behaviors. The spiral can continue to aggravate the individual's adjustment in society until some type of incarceration is necessary, or until some therapeutic occurrence reverses the cycle. The author has described other cases which may be considered in such terms as paranoid psychosis (Staats, 1963, pp. 387-389) and neurasthenia (Staats, 1963, pp. 485-486). The deterioration seen in many cases of psychosis may be in part described in these terms. It is thus suggested that the concepts and principles may be utilized in understanding additional cases of abnormal behavior.

It should be noted that this may also be extended to the consideration of exceptionally desirable personalities. That is, a child who goes to school with a well developed A-R-D system, for example, will more rapidly than usual acquire cognitive skills. As a consequence of better than usual performance he will gain positive social reinforcement in greater abundance This positive classical conditioning helps develop the child's social A-R-D system as well as the child's A-R-D system relevant to cognitive learning in general and to school associated stimuli. After a spiraling cycle, the individual can acquire a very well-developed A-R-D system in these areas as very well-developed repertoires of instrumental cognitive skills.

The primary suggestion of this discussion is that we need a great deal of additional development of the concept of the A-R-D system which includes specification of the manner in which the system undergoes a continued development in interaction with other aspects of the individual's learned repertoires. This theoretical development will necessarily include observations and concepts from the other social and behavioral sciences, education, clinical psychology, and so on.

IV. BEHAVIOR THERAPY AND BEHAVIOR MODIFICATION AND THE A-R-D SYSTEM

Human motivation has played a central role in personality theories, including those that apply to clinical problems. However, these theories have not had a specific, well-verified set of principles within which to couch their motivational concepts and their observations of human behavior. Basic learning theory, on the other hand, has had the principles. But basic learning theory has been concerned primarily with detailing the principles in experimentation and getting a particular systematic statement of the principles (theory) accepted. As a theory of human behavior, however, the basic principles require statement in a manner that is oriented specifically toward the task. Furthermore, it is necessary to relate the observations and concepts of the clinical and social sciences to the basic principles, as has been suggested.

The contemporary learning psychotherapies, although working with learning principles in the context of clinical problems, have tended to accept the viewpoint of the basic laboratory restricting themselves to the use of the traditional learning theories. Thus, as will be discussed further, learning psychotherapies have not had a concern with broad aspects of human motivation, but have been restricted to the application of learning techniques to specific and seemingly unrelated aspects of human behavior. This section will briefly place certain parts of the learning therapies within the structure of the human motivation theory that has been outlined. By doing so it will be possible to see the contributions the learning therapies can make to the development of personality theory, to understand better the general significance of the learning therapies, and also to see some of the aspects of the task which lies ahead in creating a better learning theory of human motivation (and human behavior or personality) as well as better methods of treating problems of human behavior.

A. Behavior Therapy as a Procedure for Changing the A-R-D System

Before discussing behavior therapy within the context of human motivation it should be indicated that some aspects of this area of investigation and treatment are not related to the several aspects of the present discussions. For example, there are classical conditioning treatments that are concerned only with the way the individual "feels" (emotionally) about certain events with the attitude aspect of the A-R-D system, not with the reinforcing and discriminative properties of those events. The fact that there are objects that elicit a fear response in the individual may, for this reason only, be important to his physical health and to his happiness. Many inappropriate emotional responses acquired or changed (treated) through conditioning may be of concern to the study of psychosomatic illnesses (see Dekker, Pelser, & Groen, 1956, for an example). Thus, certain stimulus objects and events may elicit asthmatic attacks in the individual, or other internal (emotional) responses such as irregular or rapid heart beat, inappropriate secretion of digestive (or other glandular) juices, and so on.

Anxiety states, depressions, phobias, and other unusual "emotional" responses may be considered and treated in terms of classical conditioning--without being concerned with the manner in which instrumental behaviors are affected. These and other aspects of behavior therapy are placed in the present theoretical context. However, since they concern only the attitudinal part of the A-R-D system, they will not be dealt with in any detail here.

There is, however, another type of treatment in the field of behavior therapy which, while employing classical conditioning procedures, has not been primarily concerned with emotional responses but rather with instrumental responses. This type of behavior therapy, which has been of important concern, may be understood in greater detail by employing the theoretical structure already outlined. That is, it has been suggested that an individual's A-R-D system is a determinant of his instrumental behavior. It may be stated in summary form that when a necessary reinforcer is not in the individual's system there will be a deficit in the relevant aspect of the individual's adjustive instrumental repertoire. On the other hand, when there is a stimulus in the A-R-D system that should not have reinforcing value, or which has an inappropriate amount of reinforcing value (that is, is too high in the reinforcer hierarchy), then inappropriate instrumental behaviors will occur in the ways that have been described. The inappropriate reinforcer, either positive or negative, may promote the absence of appropriate behaviors as well as the surplus appearance of inappropriate behaviors. It is enlightening to consider part of behavior therapy as changing the individual's A-R-D system and through this inducing changes in his instrumental behavior repertoire.

Behavior therapy techniques have been employed in which the unconditioned stimulus (which is both a ^{UC}S and a ^{UCR}S) is positive and elicits positive emotional responses as well as where the unconditioned stimulus is negative and elicits negative emotional responses. Usually the procedures can be seen as clear cut cases of classical conditioning. The unconditioned stimulus is paired with the stimulus which is intended to come to elicit the new emotional response, ordinarily called counterconditioning. It is important to note that both first-order and higher-order classical conditioning procedures are used but this important distinction is not made--part of the general lack of analysis.

Several case studies may be used to provide illustration of the present analysis. For example, in one case study (Lazarus, 1960), a child would not enter a vehicle (a case of phobia for automotive vehicles). The successful treatment consisted of pairing "vehicular" stimuli with positive unconditioned reinforcing stimuli (e.g., candy), as a consequence the instrumental behavior of avoiding vehicles as lessened. This may be seen as a case where the class of stimuli, vehicles, had previously come to elicit a negative emotional response. This gave negative reinforcing value to the stimuli, and hence,the stimuli had discriminative stimulus value controlling striving away from responses. When, through classical conditioning, positive emotional responses were conditioned to the stimuli the discriminative stimulus value was changed in a positive direction and the child no longer so vigorously moved away from the vehicles. It should be noted that in this case (as in the other cases to be cited) the discriminative stimulus value was changed prior to getting the child to approach a car. Thus, instrumental conditioning (response contingent reinforcement) was not involved in the process described. Instrumental conditioning could only be conducted after the response of approaching the car had been made.

Another case of behavior therapy (Raymond, 1960) may be analyzed in the same terms. In this case study the aberrant behavior of an adult male involved contacting women's purses and baby carriages in a manner that was undesirable. This instrumental behavior had resulted in repeated arrests. Treatment consisted of pairing the "fetish stimuli" with an aversive unconditioned reinforcing stimulus in a classical conditioning procedure. The result was that the instrumental behavior no longer occurred. It is necessary again to account for the change in the instrumental behavior through the same analysis. It is suggested that the fetish stimuli had come to elicit emotional responses in the individual and thus to have sexual reinforcing value which discriminatively controlled the undesirable instrumental behavior. The emotional conditioning changed the reinforcing value of the fetish stimuli (in this case in a negative direction), and hence, the discriminative stimulus value controlling the undesirable approach instrumental behaviors.

Behavior therapy treatment of alcoholism involves the same analysis. Through treatment the sight and smell of the alcoholic beverage becomes the conditioned stimulus which elicits a negative emotional response, rather than a positive emotional response. The stimulus of the beverage thereby comes to act as a discriminative stimulus which controls escape and avoidance instrumental responses.

Desensitization therapy may also be considered in the same terms. That is, the patient may be asked to list in order of intensity the various stimulus situations which elicit anxiety (negative emotional responses). Then the patient is presented with these situations, or asked to imagine them, while relaxing, beginning with the stimulus situation that elicits the least intense response. Since the phobic stimuli are conditioned stimuli that have come to elicit negative emotional responses through the individual's particular conditioning history, it would be expected that continued presentation of the offending stimuli would result in extinction of the inappropriate emotional responses. (If this type of therapy is thought of as counterconditioning, as has Davison (in press), then the instructions to relax may be considered as a learned ^{UC}S, and the process is thus a case of higher-order conditioning. It should be noted, also that desensitization therapy requires further analysis since images are involved in many cases, not primary stimulus situations).

To continue, however, the success of desensitization therapy lies in the extent to which the discriminative stimulus control of the stimuli changes. Thus, using an example of an agoraphobia, when the individual's A-R-D system is changed so that "out-of-door" stimuli no longer elicit a negative emotional response, the stimuli will no longer have discriminative stimulus value controlling escape behaviors which drive the individual inside.

In general, thus, while these behavior therapy procedures manipulate changes in the A-R-D system through the use of classical conditioning principles and procedures, it is the change in the *discriminative control of instrumental behaviors that indicates the success of the therapy*. It is emphasized that instrumental behavior can be changed by using classical conditioning procedures to change aspects of the A-R-D system. It is this analysis that has not been clearly set forth and which when extended to a general concern with the A-R-D system has a general significance for understanding and treating human behavior.

1. The Instrumental Conditioning Effect of Behavior Therapy

The instrumental behaviors that are ordinarily dealt with in such therapy as described above are actually already well learned. They are approach or avoidance behaviors that are very common. In cases where the instrumental behavior is not the individual's repertoire, however, a simple change in the individual's reinforcer system would not be expected to result in immediate improvement. The patient would still require a training program (formal or informal) where the instrumental behavior has to be learned. Thus, for an example, making same sex stimulus objects (men or women) come to elicit negative emotional responses would not cure the homosexual's problem of behavior if he did not have the appropriate heterosexual instrumental behaviors already in his repertoire. He would still have to acquire the very complex courting behaviors of various social, emotional, and cognitive kinds. As another example, changing the extent to which the general school situation elicits a fear response in the child will not successfully treat his school phobia if the fear response has arisen because of the receipt of negative reinforcing stimuli from his classmates because his cognitive repertoire is poor, because he is maladroit athletically, because he has an odd appearance, and so on. Although in some cases the school phobia is simply a problem of an inappropriate A-R-D system many other times this is complicated by inadequate social, cognitive, and sensory-motor instrumental repertoires of great complexity.

The extent to which one could rely on instrumental learning of complex behaviors simply through the change of the A-R-D system should be of concern in the diagnosis and treatment of any clinical problem. Such analyses would no doubt involve the complexity of the skill to be acquired, the duration of the treatment induced change in the reinforcer system, which is of importance if the training is to be long-term, and so on. Homosexual problems and alcoholism, as examples, do not seem to be successfully treated by changing the A-R-D system through conditioning. While this is not the place for a full discussion, it would seem that the complexity of the instrumental (and other) behaviors to be learned in these cases probably requires more than an ephemeral change in restricted aspects of the A-R-D system. In such cases, as will be further discussed, behavior therapy treatments could well be called symptomatic.

In addition to the straightforward conditioning of emotional responses, and the process just described of changing instrumental behaviors by changing emotional responses,other treatments of various kinds have been labeled behavior therapy without theoretical distinction (see Eysenck, 1960). In some cases, the treatment has involved indirect instrumental conditioning, for example, the case of dermatitis caused by scratching maintained by social reinforcement, as reported by Walton (1960). These aspects of behavior therapy will not be of concern here, except as an example of the lack of theoretical clarification in the field.

In concluding this section, it may be said that the field of behavior therapy involving changing aspects of the A-R-D system has other limitations, which will be discussed further on. It may be suggested, however, that the findings already made indicate that a feasible manner for the change of instrumental behavior is through the change of aspects of the individual's A-R-D system. This has been shown in a number of studies and constitutes a very significant development.

B. Behavior Modification as Manipulation of Reinforcers In the Existing A-R-D System

Again, as in the preceding discussion, no attempt will be made to summarize the work in what has come to be called behavior modification. Rather the purpose will be to fit this type of work into the general theoretical framework to relate it better to behavior therapy and to indicate avenues for further development in learning therapies.

In contrast to behavior therapy, behavior modification studies have been self-conciously concerned with instrumental behaviors and direct instrumental conditioning procedures. As in the case of behavior therapy, the reinforcer system is centrally concerned. Moreover, it is actively manipulated. Unlike behavior therapy, however, the individual's A-R-D system is not changed or, at least, this possibility is not usually dealt with by with by investigators in this area. Thus, deficiencies in the individual's reinforcer system are usually left untouched. Rather, an artificial (but already effective) reinforcer subsystem is employed or natural reinforcers are manipulated according to changed rules to treat problems of instrumental behavior. This is done when the rules in force in the individual's life situation are inappropriate or the sources of reinforcement are inadequate or inappropriate. The behavior modification worker ordinarily has restricted his interest to instrumental conditioning principles and instrumental behaviors.

There are a number of studies that are of interest in this area, but only a few will be mentioned as examples. An early article that adumbrated the behavior modification treatment of psychotic symptoms (Staats, 1957) may be used as an introduction.[5] That is, it was suggested that (a) psychotic symptoms may be considered behaviors that are instrumentally conditioned, (b) reinforcers manipulated by hospital personnel inadvertently condition and maintain such symptoms, and (c) the symptoms could be treated by instrumental conditioning procedures, including extinction. Several of the earliest and best known studies of behavior modification were based upon this rationale and provided direct support of these suggestions. For example, Ayllon and Michael (1959) showed that psychotic behaviors were maintained by social reinforcement and could be manipulated through the use of instrumental conditioning procedures. Compulsive visits to the nurse's office were maintained by social reinforcement and when this source of reinforcement was removed the undesirable behavior extinguished. Psychotic talk was diminished by extinction and sensible talk was reinforced, with expected instrumental conditioning results. Compulsive magazine hoarding was reduced by removing the social reinforcement that had been contingent upon hoarding and by satiation operations. That is, the ward was flooded with magazines.

More recently, there have been a number of extensions of the same principles to child behavior (for example, Staats, Staats, Schultz, & Wolf, 1962; Wolf, Risely, & Mees, 1964; Allen, Hart, Buell, Harris, & Wolf, 1964). Staats et al. showed that single subjects could be subjected to experimental (reinforcement) treatment and then using each subject as his own control the conditions could be reversed to reliably demonstrate the effect of the reinforcement. Wolf, Risely, and Mees (1964) showed, among other things, that temper tantrums in an autistic child could be treated by making a mild punishing circumstance contingent upon the behavior and by withdrawing social reinforcement. The same child was trained to wear glasses through the use of food reinforcement and good-deprivation procedures. Allen et al., (1964) showed that social interaction behavior with other children could be increased in an asocial child by making social reinforcement of teachers contingent upon the social interaction behavior. Similar procedures have been applied to the treatment of excessive crying (Hart, Allen, Buell, Harris, & Wolf, 1964) and to the treatment of regressed crawling (Harris, Johnston, Kelley, & Wolf, 1964), and so on.

Many other studies which deal with behavior problems through the manipulation of reinforcers in the alteration of instrumental behaviors have been described or summarized in books of readings by Krasner and Ullman (1965; Ullman & Krasner, 1965), and Staats (1964a). Although there are again a number of studies with different types of subjects and different behaviors, for the most part, the behaviors dealt with have been of a simple sort. Nevertheless, although the scope of behavior modification, and others that will be discussed, bear this limitation, it is clearly evident that many important human behaviors that are relevant to personal adjustment are acquired and changed through instrumental conditioning and that treatment procedures based upon the response contingent manipulation of reinforcers are of great value.

B. Relationship of Behavior Therapy and Behavior Modification

The previous discussions indicate the relationship of behavior therapy and behavior modification when considered within a theory of human motivation. Several additional points may be made in specifying the role of each and thus the relation of the two.

Behavior therapy is primarily concerned with changing aspects of the A-R-D system through classical conditioning techniques. The manipulation concerns the first function of the A-R-D system.

The primary dependent variable, however, is a change in instrumental behavior. It is noteworthy that in this type of therapy the instrumental conditioning circumstances are not manipulated; rather, one depends upon the naturalistic conditions of reinforcement to remold the undesirable instrumental behavior in a manner that is in many cases not controlled in any way by the experimenter. As will be discussed, the assumption that the variables in the naturalistic situation will take over to produce the benign behavior change, after the A-R-D system has been altered, may or may not be met in any particular case.

Behavior modification, on the other hand, has a primary concern instrumental conditioning principles, and ignores the classical conditioning effects that are part of its manipulations. Unlike behavior therapy, behavior modification directly deals with the instrumental behaviors. Moreover, the changes in the instrumental behaviors has been dealt with systematically and in a specified manner. However, as has been indicated, when a reinforcing stimulus is presented in an instrumental conditioning procedure, the stimulus elicits an emotional response which is classically conditioned to the other stimuli in the situation. Thus, classical conditioning of new reinforcing stimuli occurs in the instrumental conditioning (behavior modification) procedure, as will be illustrated later. Nevertheless, behavior modification work has not specified the changes it produces in the individual's A-R-D system, nor has it attempted to assess or manipulate such changes. At this point it will suffice to say that behavior modification has been as unsystematic about emotional conditioning (change in the A-R-D system) that is a by-product of its procedures, as behavior therapy has been about the instrumental conditioning aspect of its procedures.

It may be suggested that each type of learning treatment has made large contributions, but has also been inadequate by itself in the ways implied above. That is, instrumental behaviors of concern to clinical psychology must be dealt with in great detail. Even more pertinent to the present paper, the A-R-D system must be dealt with in greater scope and specificity. In addition, both behavior therapy and behavior modification must realize the complex outcomes of their oversimplified treatments, and this calls for detailed analyses of the stimulus-response components involved. These topics will be treated in the following section.

V. LIMITATIONS AND INADEQUACIES IN PRESENT LEARNING THERAPIES

Methods of psychotherpay that deal with the undesirable behavior itself, rather than a supposed underlying cause (psychodynamic), have been called symptomatic. A thorough-going learning approach, however, considers that personality--the individual's complex social, emotional, cognitive, and what have you, behaviors--is learned. This admits of no hypothesized inner mental determinants, only stimuli and responses of various kinds and complexities of arrangement. To be labeled a symptomatic approach in terms of dealing with specifiable behavior, is not pejorative from a learning viewpoint.

However, there are several reasons for describing both contemporary behavior therapy and behavior modification as symptomatic, and in a pejorative sense. The limitations and inadequacies that make the learning therapies as they exist today symptomatic can be described under several headings which will be dealt with separately. The analyses will also illustrate the advantage of the present learning theory in considering the conditioning therapies. The heuristic value of the analysis will also be exemplified.

A. Limitations in Scope

Behavior therapy that has been concerned with changing the emotional, and, thus, reinforcing value of stimuli, has been a symptomatic approach in several respects. First, behavior therapy has been very atomistic. Only specific stimuli are dealt with. There is no general recognition of the individual's A-R-D system, as with a system, let alone consideration of the aspects of the cultural and subcultural variations in the A-R-D system as they affect individual and group behavior. Behavior therapy has restricted itself to the types of problems that its limited theory and procedures can handle. These have by and large been single emotional responses to single stimuli, or narrow classes of stimuli. Thus, most of the work of behavior therapy of this type has been dealt with phobias. Fetishes have been dealt with but these are also quite simple disturbances in terms of the stimuli and responses involved. While sexual disorders have been dealt with in instances, success has depended upon the simplicity of the problem, as will be indicated below. The same is true of alcoholism. In this area behavior therapy (aversion therapy) is so restricted that it can only be considered an adjunct treatment both on practical and on theoretical levels.

We do not see the work of behavior therapy the treatment of the more general problems that humans have. The theory and procedures of behavior therapy have not been developed to deal with cases where many aspects of the A-R-D system are involved, and where the behaviors that are affected are consequently quite complex. Thus, we do not have behavior therapy that deals with the "lack of motivation" that we see in such general problems as neurasthenia, schizophreniak psychopathic personality, school underachievement, criminal behavior, cultural deprivation, mental retardation, and so on. Each of these types of problems when generally considered, concern widespread deficits and inappropriacies in the A-R-D system--and many times this is the original or focal problem.

In addition, of course, the bag of techniques of behavior therapy is quite restricted. First-order and higher-order classical conditioning procedures have been applied, but the lack of analysis of the procedures and the weak theoretical basis of the approach has restricted their general application. The author will deal with one of the primary faults of therapy, promulgated by Eysenck (1960), in a later analysis: its lack of analysis, and rejection, of verbal psychotherapy. In addition, however, behavior therapy has not employed schedules of classical conditioning to produce resistance to extinction of the effects. Nor has behavior therapy employed deprivation-satiation operations (at least self-conciously), which in terms of altering the hierarchical reinforcer system. Furthermore, the rationale of behavior therapy has not included an inderstanding of the effects of treatment upon the discriminative stimulus value of the stimuli it manipulates, and so on.

Behavior modification studies suffer from the same types of weaknesses. Thus, with few exceptions behavior modification procedures have been restricted to work with simple responses. This has been the case, in part, because only simple manipulations of the A-R-D system have been attempted--with little attempt to change the individual's A-R-D system or the A-R-D system of the institution in which the problem behaviors are generated, such as school, work, prison, hospital, family, and so on. A prominent weakness has been in the lack of consideration of the wide range of problems that involve the A-R-D system and consequently the things that could be done to deal with such general problems. For most part, thus, behavior modification studies have involved simple responses: crawling instead of walking, putting on and wearing glasses, the extinction of temper tantrums or the suppression of self-destructive behavior through punishment, getting a mute schizophrenic to talk who already has a language repertoire, reduction of visits to the nurse office or reduction in magazine hoarding through the removal of social reinforcement for these behaviors, and the like. Almost entirely, the literature of behavior modification consists of repeated demonstrations that abnormal behaviors follow the principles of instrumental conditioning. There is almost a total lack of detailed, explicit, long-term training programs that deal with general and widespread problems of behavior, programs involving general understanding, and manipulation, of an individual's A-R-D system.

We see the same simplicity when inspecting the manipulations of the A-R-D system that have been attempted. Thus, there are studies in which candy is used as the reinforcer system. There are studies where social reinforcement is manipulated, in extinction and in conditioning, and so on. Generally, however, the possibilities for large-scale manipulations of effective reinforcers for individuals and groups in treatment of behavior problems have not yet been exploited. As the author has indicated, although simple reinforcer manipulations will suffice if the behavior being treated is simple and the treatment is consequently of short duration, much more effective A-R-D system manipulations are necessary when the behavioral repertoires are complex and the training is of long duration. The author (Staats, 1963, 1964a, 1968a; Staats & Butterfield, 1965; Staats, Minke, Finley, Wolf, & Brooks, 1964; Staats et al., 1962) has discussed the possibility for overcoming some of the problems of the reinforcer system by the use of a token system. The token-reinforcer system involves presentation of conditioned reinforcers for the desired behavior, the reinforcing value of the tokens being maintained by pairing them with a variety of backup reinforcers which the individual selects. In this procedure instrumental learning behaviors may be maintained over long periods of time, while complex repertoires are acquired, since the limitless variety of reinforcers prevents satiation. Token systems of reinforcement, as already indicatdd, have been used in additional behavior modification studies (Ayllon, 1965; Birnbrauer, Wolf, Kidder, & Tague, 1965; Staats & Butterfield, 1965). As will be suggested in a following section, however, these applications do not begin to deal with the problems of behavior which arise because of defective individual and group reinforcer systems, nor do they exploit the possibilities inherent in the approach (see Staats, 1968a).

In general, the same types of limitations already mentioned in describing behavior therapy apply equally well to behavior modification. Schedules of reinforcement have been little used although one study (Staats, Finley, Minke, Wolf, and Brooks, 1964b) shows the potentiality of the utilization of the principles for the treatment of complex behavior problems. Deprivation-satiation operations have been little employed as a means of altering the reinforcer system, and then only in a limited fashion (see Ayllon & Michael, 1959). Such complexities as the interrelationship of reinforcement value and discriminative stimulus value have not been dealt with in behavior modification treatments or in behavior modification theoretical analysis, a topic relevant to the next section.

B. Limitations Imposed by Lack of Sophisticated Theoretical Analysis

When a detailed analysis is not made of the general problems of behavior of the patient, and when oversimplified methods of treatment are employed, it must be expected that unless the treatment restricts itself to simple behaviors there will be cases of failure. It is here that conditioning therapies have been most open to the charge of symptomatic treatment and the possibilities of symptom substitution. It is not possible to go into this topic fully, but several examples may be used to illustrate the point.

Let us take the behavior therapy case reported by Raymond (1960) that has already been summarized herein. The problem, in the theoretical terms employed herein, was that women's purses and baby carriages had strong sexual reinforcing value for the patient, and thus strong discriminative stimulus value which controlled his instrumental behaviors of "handling" the objects. The treatment, which was successful, changed the attitudinal and reinforcing value of the stimulus objects and thus their discriminative stimulus value. The effect upon the patient's behavior had several facts. He no longer approached the stimulus objects. He did not masturbate while thinking of objects, and his sexual behaviors with his wife improved. When the treatment and its effects are analyzed more deeply, however, it may be seen how the success of the treatment depended upon certain factors which were not understood or controlled in the behavior therapy, and how, if these unassessed factors had been different, the treatment could well have resulted in symptom substitution.

A more complete analysis of the treatment would include the following. The treatment changed the attitude and thus reinforcing value of the fetish objects. This, however, resulted in short-term "motivational" changes in the patient's A-R-D system, as well as in long-term changes. That is, let us say, that the patient had a hierarchy of sexual reinforcing stimulus objects in his A-R-D system as would be expected. At the top of the hierarchy were the fetish objects. Somewhere lower in strength was the patient's wife. No doubt, as must be the case with people in general, other social stimuli (women, girls, men, boys) and other objects, and perhaps animals, would also have sex reinforcing value for the patient. It would be expected that lowering the reinforcement value for the class of fetish objects in the individual's sexual reinforcing system would have several effects. It would raise the reinforcement value of the other reinforcers in the system relative to the stimuli whose value was lowered. Moreover, especially if the stimulus involved was the strongest reinforcer in the system, when a dominant sex reinforcer is no longer available (because of absence or because the individual no longer finds it sexually reinforcing) the individual to that extent suffers deprivation. Deprivation has the effect of raising the value of all the positive sex reinforcers in the individual's system.

On both of these bases it would be expected that the patient in this example, after treatment, would find his wife a stronger sex reinforcer--provided she was a strong positive reinforcer in his system in the first place. That being the case, it would be expected that the likelihood of sexual interaction between the patient and his wife would be increased Each successful instance of such sexual interaction would be expected to increase further the reinforcing value of the wife through positive classical conditioning, a lasting result.

When this analysis is made, however, it can be seen that the treatment could easily have gone awry. What, for example, would have been the predicted outcome if small girls were the second strongest class of sexual reinforcing stimuli in the patient's system? Removing the fetish objects as sex reinforcers would have raised the sexual reinforcing value of little girls in the patient's reinforcer system. It would then be more likely that the possibility of aberrant sex behaviors involving children would have arisen as a symptom substitution. If members of the same sex were sexual reinforcers for the patient, then homosexuality could well have been precipitated or increased in incidence. The message is clear. An unsophisticated analysis of the factors involved in the individual patient's behavior, in this case that of the individual's A-R-D system, could lead to unsuccessful treatment and possibly to the production of even less desirable behaviors in a process reminiscent of classical symptom substitution. It must be concluded that the behavior therapy treatment at issue was based upon unsophisticated theory and unsophisticated assessment of the patient's reinforcer system and was thus potentially hazardous.

Several other examples that could occur may be briefly mentioned to illustrate the points. Thus, it would be ineffective to look at the weak behavior of the neurasthenic by putting him in a bar pressing compartment and by instituting a reinforcement schedule to promote vigorous responding. Dealing with a simple instrumental behavior, the symptom, would be ineffective although many contemporary operant conditioners accept such a naive "experimental analysis" approach. Similarly, the employment of reinforcers in a behavior modification situation to strengthen the neurasthenic's actual behaviors (the symptom) would also be ineffective, if the fault was the inappropriate nature of the individual's A-R-D system for the life situation in which the individual found himself. In such a case general changes in the individual's reinforcer system would have to occur, or general changes would have to be made in the available reinforcers as imposed by the individual's life situation. The instrumental behavior itself is not the problem; these behaviors are usually well learned already and when the neurasthenic is properly "motivated" will be exhibited in good strength.

As another example, it would be ineffective to condition a negative emotional response to alcohol if the reason for drinking was to reduce the anxiety (negative emotional) responses elicited by the social situations the patient is forced to face. The denial of the alcohol to the patient through behavior therapy, without dealing with the problems the patient has with the other aspects of his reinforcer system relative to his life situation could also backfire. The patient could turn to drugs as an escape from the aversive social experiences, or social withdrawal could occur, or he might run away fom his life situation as amnesics do.

By the same token, it would be ineffective to remove a child's school phobia by positive classical conditioning (or desensitization) if going back to school means that the child will receive additional negative emotional conditioning in that situation. The types of cases that could be listed here to exemplify the symptomatic nature of behavior therapy and behavior modification, because of lack of detailed and sophisticated analysis and assessment, are indeed large in number.

It may be suggested that the present type of analysis offers an answer to the charge of Breger and McGaugh (1965). They asked, correctly so, in an article that included less well-founded criticisms, if a neurosis consists solely of specific symptoms, how do behavior therapists account for the general results of their specific treatments? Specific symptoms of behavior are treated, but other behaviors are also affected in learning therapies. The patient treated for his handbag and baby carriage fetish later had better sexual relations with his wife, for example. The production of general results from specific treatments is not difficult to understand when it is realized that the specific treatment effects a system of related stimuli, and when the analysis shows the various principles involved and the various events that are effected. Breger and McGaugh's criticism should have been directed at the lack of sophistication or oversimplification of conditioning therapies, rather than at learning approaches in general. There is nothing necessary in a learning approach that produces oversimplification or lack of theoretical analysis and sophisticated assessment, although the traditional learning approaches have exhibited these inadequacies.

Several additional examples should also be given that deal even more specifically with behavior modification and its shortcomings. When aspects of the A-R-D system are manipulated there are effects on other aspects of the system which may have unforeseen outcomes. A simple case may be seen in the use of edibles, such as candy, as reinforcement. This will have the effect of lessening the strength of food reinforcers in the individual's system, and of increasing the relative strength of other reinforcers. This principle can be involved in more crucial ways. It may be suggested, in a very analogous example, that one of the drawbacks to traditional psychotherapy can be that the social reinforcement provided by the therapist may satiate the individual for this class of reinforcers, making the patient less likely to "strive" for other social relationships. The author knows of a case in which the social withdrawal of a patient seemed to be enhanced through this process, and where improvement in this respect did not commence until psychotherapy terminated.

An additional limitation is the lack of recognition of the general changes in the reinforcer A-R-D system that can occur through behavior modification procedures. That is, as has been suggested, when a reinforcer is presented this results in conditioning the emotional response elicited by the reinforcer to the other stimuli in the situation. This could be a positive result, but negative by-products are quite possible. For example, although punishment might be used to weaken an undesirable behavior (as in the early work of Lovaas, et al., 1964), it should also be noted that punishment is an unconditioned stimulus that elicits negative emotional responses. These responses will be conditioned to any stimulus present in the situation, including the therapist who administers the unconditioned negative reinforcer, the general stimulus situation, and so on. In a recent study, for example, an autistic child was shocked when he made a self-injurious behavior. During this training the therapists "talked to him, praised virtually all non-injurious responses, and generally behaved pleasantly" (Tate & Baroff, 1966). Although this case was reported to be generally successful, it should be noted that the procedures would be expected to make "pleasant behavior" of adults into a negative reinforcing stimulus, an undesirable outcome. It would have been more effective in terms of the broader learning of the child to pair the punishment with words that should become aversive such as "no" or "bad." It must be realized that negative classical conditioning occurs when using punishment to weaken an instrumental response in behavior modification procedures. And the converse is also true. In each case the A-R-D system may be affected in undesirable ways.

It is in the realm of the inadequacy of theoretical analysis that Skinner's learning theory and philosophy of psychology have had an unfortunate effect. In his overemphasis upon operant conditioning technology, the principle of reinforcement, and the philosophy of the nonanalytic experimental analysis of behavior, Skinner has had a detrimental effect upon the extension of learning theory to human behavior generally. His antitheory position and opposition to S-R analysis have reduced the followers of this position largely to exploring the manipulation of the principle of reinforcement with a new sample of simple behavior or with a new type of subject.

Investigators can perform this type of research with knowledge only of the one principle of reinforcement. The unadorned principle of reinforcement is a crucial one in understanding human behavior. However, while at one point it is important to demonstrate the importance of the principle in the context of various behaviors, this is not a sufficient activity to yield a general conception of human behavior. It is not even sufficient for obtaining a profound understanding of specific repertoires of behavior, with the related ability to treat problems in that area of behavior. We must go past simple demonstrations in which different aspects of behavior are affected by reinforcement.

A sophisticated theory of learning and a sophisticated philosophy of psychology, and of science in general, offers a much more effective base for the investigation and treatment of specific aspects of human behavior as well as for establishing a general conception of personality. The potential of the learning approach will only be realized within such a sophisticated theory.

C. The "Ahistorical" Limitation

It has been suggested that conditioning therapies are not concerned with the history of the individual. Eysenck, for example, has been a strong advocate of an ahistorical approach, and has indicated that behavior therapy accepts the individual as he is. "All treatment of neurotic disorders is concerned with habits existing at present; their historical development is largely irrelevant" (Eysenck, 1960, p. 11). The oversimplification characteristic of contemporary learning therapies has already been suggested, and the ahistorical tenet is one of the prime examples. Thus, Eysenck's injunction was very appropriate and significant in the context of the psychoanalytic denial of the importance of the abnormal behavior itself--insisting rather upon the primordial role of unconscious psychodynamics. But it is necessary to consider the injunction as anachronistic in terms of a learning theory. That is, the whole foundation of a sophisticated learning conception of human behavior is that conditioning history is all important in accounting for complex human behavior (personality). Thus, the ahistorical injunction is an obstacle to progress.

It should be indicated that the interest in personal history which should be central to a learning theory has also been rejected in the oversimplification dictated to by the operant conditioning approach and its attendant philosophy of psychology (Skinner's functional analysis). Lovaas (1966) states the following, for example:

> The experimental laboratory design and the objective of isolating functional relations place restrictions on certain kinds of questions that the investigator may want to raise concerning abnormal behavior--for example, about the parent's role in the etiology of childhood schizophrenia. Answers to such questions, though often intriguing, entail so much confounding that they are meaningless in a functional analysis of abnormal behavior (pp. 111-112).

Since the ahistorical position represents a philosophical statement, one which could be expected to influence a variety of works of many investigators, it is worth spending a moment in correcting its errors and disadvantages.

First, the approach leads to a neglect of the naturalistic conditions that could be maintaining the abnormal behavior. Let us say, for example, that a patient utilizes aberrant sexual reinforcers because his wife's sexual behavior has resulted in her being very low in his reinforcing system as a sexual reinforcer. Behavior therapy (aversive conditioning) which would make one of his aberrant sexual reinforcers ineffective may have unfortunate consequences, as has been described. It would be more important in the correct treatment of this case to ascertain the wife's sexual behavior, and the effects upon the patient's reinforcement system, than to neglect this naturalistic history and to deal only with the aberrant sex reinforcer in the controlled conditioning procedures.

In general, thus, when one considers the complex learning determinants of human behavior it appears totally unreasonable to expect to be able to treat problems of human behavior in such a simple minded fashion, unless the behavior is indeed very simple and very isolated. In many cases it must certainly be necessary to concern oneself with the individual's conditioning history prior to treatment. Moreover, it would be necessary to be as fully conversant with the individual's present life circumstances and social, emotional, and cognitive repertoires in as sophisticated manner as possible prior to treatment. With children, for example, it would be necessary to know what the nature of the child's training was and is. Treatment could easily be reversed by the parents otherwise.

This has concerned individual treatment. It is even more important that learning approaches are considered for their reseaech potential and ultimate use in a prophylactic manner (as well as for the opportunity of yielding a general theory of human behavior). That is, only by detailed S-R theoretical analyses and experimental investigation of the types of conditioning circumstances that lead to various abnormal behaviors will we be able to devise instructions to improve methods of child training, as well as provide bases for devising treatment procedures. Otherwise learning therapies are mere techniques. One of the crying needs of a learning approach to clinical psychology will involve analyses that will indicate how various complex behavior problems arise and are maintained in the naturalistic circumstance. Moreover, it may be suggested that a learning theory that integrates the principles of classical and instrumental conditioning forms a theoretical structure in which various problems of human behavior, and the manner in which they arise, can be analyzed in specific S-R terms in the necessary detail. Oversimplification, historical or otherwise, is not at all advantageous or inherent in a learning approach.

VI. IMPLICATIONS AND EXTENSIONS

The foregoing by no means includes a complete analysis of human motivation and its implications for clinical treatment; rather, an approach and a method of analysis have been suggested, The most general suggestion is that learning therapies require a great deal of further development along theoretical (and empirical) lines to realize the potential of a learning approach. It is not possible to deal extensively with specific implications for further development. However, a few examples that have general significance may be briefly mentioned.

Some of the specific lines of development have been implicit in the foregoing criticisms. Thus, it has been suggested that behavior therapy has been limited in scope, largely restricted to dealing with simple, singular distortions in the individual's A-R-D system--such as occurs in fetishes, phobias, and so on. When the area of study and treatment is considered in terms of the present motivational theory many other more complex problems that concern general distortions in the reinforcer system can be seen. These examples suggest that we begin investigating the possibility of treating such general problems. We should, for example, consider theoretically and empirically the possibility of changing the reinforcer system in a child for whom the teacher's approval is not a positive reinforcer, for whom acquiring new skills is not reinforcing (who has a deficit in achievement motivation), and for whom school buildings, school books and materials, teachers, other "good" students, and so on have become stimuli that elicit strong negative emotional responses (which control 'striving against' behaviors). (It should be noted in this and the other examples that any particular problem may require treatment of other deficits and inappropriacies of behavior as well as general changes in the A-R-D system. These considerations, however, are topics for another paper.)

Let us, as another example, investigate the possibility of changing the A-R-D system of an individual who finds winning so exceedingly reinforcing that his behavior is aversive to others--as an example of a behavior that is important and problematical, but not of the dramatic nature of traditional abnormal behaviors. In addition, there are many problems of various kinds, not just sexual problems, that involve the fact that the individual's social reinforcement system is awry, sometimes because the wrong people elicit positive emotional (reinforcing) responses, sometimes because they elicit negative emotional responses. As has been suggested, the drinking problems of some alcoholics may involve escape from anxiety (negative emotional responses) elicited by people and social situations that the individual must confront. This is thus a general problem of the individual's A-R-D system which could not be treated by making an ephemeral change in the reinforcing value of alcohol.

It has already been suggested that some psychotics suffer centrally from general deficits anddisturbances in their A-R-D systems. The author has briefly described a type of personal history that could produce a social reinforcer system in which people are so aversive that violent behavior could ensue (Staats, pp. 387-389). Even more widespread distortions and deficits would seem to be involved in most cases of simple schizophrenia. Research and treatment investigations should be made to study the possibility of general reconstructing the A-R-D systems of such cases. Only good could ensue from such treatment for many "backward" patients. The task would require building the individual's A-R-D system deliberately in various areas to include social reinforcers, achievement reinforcers, work reinforcers, sex reinforcers, play reinforcers, and so on. The same is true of autistic, retarded, and culturally deprived children, and criminals and neurotics of various kinds. These are not tasks to begin full force immediately, but goals to work toward in research and treatment.

There are many more examples in clinical psychology where first theoretical analyses of the problem in terms of the A-R-D system, and then the development of learning treatment procedures would seem to be very productive. This type of extension should also include analyses showing the relationship of the change in one reinforcer (or one class of reinforcers) to effects on the other reinforcers in the system in the various ways that have been described, for example, through the direct conditioning of emotional responses, through the effects of deprivation and satiation operations, and through the additional conditioning resulting from deprivation, and so on. Thus, as has been suggested, the A-R-D system must be considered to be a system, with changes in one aspect affecting other aspects. Other principles, such as schedules of reinforcement in classical conditioning and deprivation--satiation operations should be applied to treatment. Basic and clinical studies should also be conducted to study systematically the effects on instrumental behaviors that changes in the A-R-D system cause, rather than leaving this aspect of treatment to uncontrolled life circumstances. This would involve study of instrumental conditioning as well as study of the discriminative control of instrumental behaviors that reinforcing stimuli exert.

More general research on behavior modification is also needed to further the possibilities for manipulating reinforcers in the direct production of desirable instrumental behaviors. This enlargement of scope should be of several types. Thus, behavior modification research and treatment studies must come to include work that extends over a longer period and deals with more and more complex types of behavior. The author deals with this topic more extensively (Staats, 1968a,b). It may be said here, however, that the study must progress away from working with simple behaviors over short periods of time. Complex, social, cognitive, and sensory-motor repertoires must be subjected to study and treatment.

As suggested, this means the development and test of A-R-D systems for work with individuals that are effective for long periods. It also means that various types of A-R-D systems for work with individuals of various "reinforcer system impairment" will have to be investigated. This should become a self-conscious field of study. A-R-D systems will have to be developed for different types of problems and different types of institutional treatment. In developing more effective, more economic, and more practical systems for treatment and study, the principles of learning will have to be employed more generally. This should include the application of schedules of reinforcement, deprivation-satiation operations, and the like.

In addition to this type of extension, behavior modification work should be enlarged to include investigations of the possibility of changing institutional reinforcement systems for groups of people as well as for individuals. This would amount to dealing with social change or social reorganization. That is, many problems that we have been attempting to handle by treating individuals are actually social problems, difficulties common to groups of individuals. They are clinical problems in that they involve the same theory, the same problems of behavior, and the same rationale for procedures of treatment; but the treatment should be group or institutional rather than individual. Take, for example, the case of the public school institution. The A-R-D system in effect in schools has been developed by people with a particular socioeconomic conditioning history to be effective with children who have the same history and thus have the same A-R-D system. However, many of the children who are subjected to the institutional A-R-D system have a different socioeconomic conditioning history, and their A-R-D systems are thus not appropriate to the institutional system. Under those circumstances these children do not develop desirable behaviors; many times they develop "abnormal" instrumental behaviors as well as additional inappropriacies in their A-R-D systems. We must begin to investigate the way that social problems of behavior can be treated by changing the reinforcer system of the institutions to which the children are subjected, in addition to the research to change the children. The author has previously suggested (Staats, 1963, 1968a), that a school has a large number of very attractive, unutilized reinforcers for many children who have motivational problems in school. That is, there are activities and facilities at schools--gyms, playing fields, playing equipment, auditoriums and movies, and so on--that are not used as reinforcers except in the grossest way. If these were incorporated into a token system of reinforcement and applied to individual learning responses, it would be possible to treat many individual and social problems of school adjustment. The author has experimented with the use of material reinforcers for working with various types of clinical and educational problems of learning in maladjusted children, ranging from schizoid children through retardates to culturally deprived youngsters, and the results indicate that many behavior problems in children can be treated in this manner (Staats, 1968a).

We must also investigate the possibility of changing institutional A-R-D systems in treating other types of individual and social problems. Thus, much could be done in other public institutions such as prisons, homes for the mentally retarded, homes for juvenile delinquents, adult education programs, mental hospitals, and so on. It may be expected that in some cases the "treatment" indicated may require social reorganization and change. First, of course, it will be necessary to begin studies which show positive effects of making such manipulations.

The foregoing should indicate that it is not possible to approach general problems of the individual's A-R-D system by working exclusively with either changes in the system (behavior therapy) or by manipulating reinforcers to utilize better the individual's system (behavior modification). It will be necessary to work out procedures to change individual and group A-R-D systems through conditioning (training) along with manipulation of existing systems. Let us take the example of a schizophrenic with severe disturbances in his A-R-D system. While an artificial system might be instituted that could be used to train him to various social, cognitive, and sensory--motor skills, it would also be necessary to provide him with training that would culminate in a personal A-R-D system that would enable him to function within the system which is in effect in everyday life. Unless the latter was accomplished, the patient's functioning would always be dependent upon the artificial system. Much theoretical thought and experimental work will be required to investigate these possibilities. As an example, this will have to involve the manner in which classical conditioning of emotional responses takes place in the instrumental conditioning (behavior modification) treatment.

A primary point of this statement is that we need theoretical analyses that combine the integrated principles of learning with the observations of clinical psychology and the social and behavioral sciences. These will be needed in many cases before the type of empirical work suggested here becomes possible. We must make specific analyses of various abnormal behaviors in terms of abnormalities in the A-R-D system. This must be done on a broad basis, including various diagnostic categories, and in detail including a description of the development of the "abnormal" A-R-D system. Suggestions have been made in the present paper and in other analyses of the author (Staats, 1963, 1964a, 1968a,b; Staats & Butterfield, 1965), but complete and detailed coverage is necessary. The descriptions of abnormal and clinical psychology provide much of the data which is necessary to begin such a project, as do the data of some of the other social and behavioral sciences. As part of this it is also necessary to begin to specify what an appropriate (normal) A-R-D system should consist of, and to indicate the conditions necessary to produce this basic feature of human learning. It is suggested that this constitutes a theoretical task of the highest level. Several additional elaborations of characteristics of the A-R-D system in understanding personality will be made in the next section.

VII. CONCLUSION

The present paper has been restricted to considerations relevant to the conception of the human attitude-reinforcer-discriminative (motivational) system. It is suggested that theoretical analyses of the present type will also have to be made for various instrumental behaviors: social behavior, work behavior, cognitive behavior, sensory-motor behavior, and so on. The author has attempted to indicate the possibilities for such a comprehensive learning theory of personality (Staats, 1963, 1964a, 1968a,b), but much further development is necessary as the present paper suggests.

The traditional learning theories have not generated this type of theory. That is, the simple statement of learning principles, even with the demonstration of the principles in the context of various human behaviors, is not enough. Moreover, it is suggested that learning therapies must be based upon general and comprehensive learning theories of human behavior. Otherwise they will remain on the level of treating isolated and specific (symptomatic) problems which may indeed be an improvement upon traditional treatments, at least in certain cases, but which do not exploit the various potentialities.

The learning therapies require incorporation into a more general theory of personality which deals in detail with various aspects of human behavior. To exploit more fully the potentialities of a learning approach, the basic principles must be elaborated for the purpose of serving as a human learning theory. This theoretical structure then requires extensions which incorporate the observations of clinical psychology and the other social and behavioral sciences, as well as the empirical concepts that have been derived from such observations. Detailed analyses of human behavior and its determinants must be made if one is to understand and deal with complex problems of human behavior. For example, it is inadequate to simply state and extend the principle of reinforcement to a specific abnormal behavior. (Unfortunately, the present day field of behavior modification has followed this path.) However, when the principle is elaborated in its relationship to other learning principles and treatments, and extended in detail to a consideration of the human motivational system and other aspects of the personality theory, it can then be included in a general theory into which a number of specific observations can be fitted and from which many implications can be derived. This structure then has the features of a classic theory.

Learning theory has been traditionally seen as concerned with the basic principles of learning with their systematic statement and derivation. It is suggested, however, that another role of learning is seen as a basic theory of human behavior. For a learning theory to serve this role it must be able to deal with functional human behaviors of importance to the behavioral and social sciences, including clinical psychology. It is for these reasons that the term social behaviorism is employed to characterize the present approach, for it is suggested that a central concern of the human learning theorist is in dealing with significant, complex, functional, human behavior.

One further point may be made herein concerning the traditional schism between basic and applied psychology, in this case between work in learning and the practice and theory of clinical psychology. It is suggested that the schism has been maintained on both sides: by the basic (or basically oriented) psychologist who rejects the observations and concepts of the clinic and the social sciences, and also by the clinical worker and social scientist who sees the findings of the laboratory as irrelevant or as antagonistic to his approach. Each in this monolithic manner is in error. It is suggested that the schism is breached, however, when the personality theory extends basic learning principles to consideration of complex human behavior and its problems, incorporating and using the rich observations of the clinic and social sciences, and systematically using and further defining the empirical concepts derived from these observations. Thus, although the present approach is a thoroughgoing S-R approach, founded on basic learning principles, it constitutes an avenue for a rapprochement with traditional social and clinical theories. In fact it suggests that neither theory (or learning procedures) nor traditional social and clinical theories are complete. They are at major points complementary. As the present paper has attempted to show, social and clinical observations and concepts must be included to fill out the bare empirical principles of learning to constitute a theory of human behavior and a practice of clinical psychology. The term social behaviorism can be employed to denote the contribution of both aspects of the approach. This integration, it should be noted, is not a strategem for professional and scientific harmony. It is a strategem for theory building, but has within it the seeds for producing that harmony.

Over 10 years ago--in the paper that outlined the general points underlying the early behavior modification studies--the author concluded with the appeal. "(I)t is suggested that learning theory has reached a state where it has something to offer clinical theory and practice" (Staats, 1957, p. 269). This is well accepted today. It may be added at this point, however, that the vast potentialities in the extension of learning to clinical theory, research, and treatment are largely untapped. It is suggested that the personality and social theorist and the clinical theorist (and the practitioner) must be prepared to deal with the whole continuum of knowledge that has been touched upon herein. This ranges from detailed concern with the basic, integrated, learning principles and their systematic statement, through an intensive concern with the concepts and observations of the social and behavioral sciences. When this is done social behaviorism has the potential for dealing with the most significant aspects of human behavior; individual, group and cultural, child and adult, as well as normal and abnormal.

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FOOTNOTES

[1] This criticism is not to be taken as a criticism of the use of the simple conditioning principles and procedures. The author began his own learning applications in the early 1950's with simple behaviors, and has continued to contribute to the extension of instrumental conditioning principles, to the understanding and treatment of human behavior problems. For example, the author developed the first token-reinforcer system in 1959 in working with children with learning problems. He communicated the efficacy of the reinforcement system to Jack Michael at the University of Houston. Michael and Lee Meyerson began to work with mentally retarded children employing a similar token-reinforcer system. In addition, Patricia Corke and Samuel Toombs, students of Michael, set up a remedial classroom which was also based upon a token system. Montrose Wolf, who as a graduate student had contributed to several later studies employing the author's token-reinforcer system (Staats, Staats, Schutz, & Wolf, 1962; Staats, Minke, Finley, Wolf, & Brooks, 1964; Staats, Finley, Minke, & Wolf, 1964), helped introduce the system to the Sidney Bijou and Donald Baer program at the University of Washington in 1962. On the basis of such personal dissemination, along with the publication of token-reinforcer studies,including the author's (see also Staats, 1968; Staats and Butterfield, 1965; Staats and Staats, 1962, 1963), behavior modification work then began to employ the token-reinforcer system widely as did a number of later education and special education studies. It may be added that the token-reinforcer system and later developments such as the token economy (Ayllon and Azrin, 1969), are very effective in making it possible to clinically treat with instrumental learning procedures many human problems--and there is great potential for further development as the author has indicated (Staats, 1968; Staats and Staats, 1963). However, learning theory has much greater potential than that which resides solely in the use of the

simple principle of reinforcement. The simplicity characteristic of the first behavior modification development, and most contemporary efforts, should not be taken to be immutable characteristics of the learning approach. They are rather characteristics of development,rather than maturity, as the following discussion will show.

[2] Parts of Sections II and III have appeared in substantially the same form in Staats, A. W. Social behaviorism and human motivation: Principles of the A-R-D system. In Psychological Foundations of Attutides, . G. Greenwald, T. C. Brock, and T. M. Ostrom (Eds.). New York: Academic Press, 1968.

[3] In formulating an integrated learning theory of human behavior the author saw in the 1950's the possibilities for the unification of the American behavior modification (instrumental conditioning) and the British behavior therapy (classical conditioning) applications in clinical treatment. It was possible to establish the needed bridge between the two in discussions with H. J. Eysenck and S. Rachman during the author's visit to Maudsley Hospital, Eysenck's Center for early behavior therapy development, during the fall semester of 1961.

[4] It is interesting to note than Bandura (1968) has utilized the author's outline of a learning analysis of behavior disorders and treatment (see Staats and Staats, 1963) in a chapter dealing with this topic. Ullman and Krasner (1969) also have more extensively followed this method of making learning analyses of the clinical descriptions of behavioral abnormalities in their new textbook.

[5] The earliest behavior modification study, which contributed background to this 1957 article, was an informal treatment of a graduate student who had a deficit in confident, fluent speech. The author reasoned that the argumentative aversiveness which usually followed the student's statements

of opinion suppressed confident, fluent speech according to the principles of instrumental punishment. The author then enlisted the aid of Jack Michael and his late wife Betty in successfully treating this problem by applying social attention and approval contingent on the speech. The results were dramatic enough to impress the several "behavior modifiers" involved and constituted background for the other later developments. The most important basis for the analysis in the article, however, was the author's general observation that much of the professional's interactions with patient in the neuropsychiatric setting ran counter to what would be derived from a learning approach. That is, the professional with a psychodynamic approach attends more to abnormal behaviors of the patient that he does to normal behaviors, because he considers the abnormal behavior to be a result of unresolved psychic conflicts, and thus the key to the individual's problems. The learning approach indicates, conversely, that social attention strengthens behaviors on which it is contingent and focuses upon conditions that will maximize desirable behaviors and minimize undersirable behaviors.

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13. ABSTRACT

A learning theory of human motivation is considered to involve (1) the manner in which stimuli of various kinds come to elicit emotional (attitudinal) responses in the individual through the principles of classical conditioning. This concerns the A function of the stimuli in the individual's motivational system. The second function of the stimuli in the motivational system, given to the stimuli as a result of the attitudinal function, is that the stimuli will serve as reinforcing stimuli for the individual. This concerns the R function of the motivational system. In addition to this, stimuli that have the A and the R functions will also have a third function for the individual. Such stimuli will elicit (or control) behaviors. That is, as soon as a stimulus comes to elicit a positive emotional response through classical conditioning the stimulus will thereby acquire the power of controlling instrumental responses in the individual that approach the stimulus. The converse is true for negative A-R-D stimuli.

The implications of this learning theory are elaborated in the context of presenting a theory of human motivation. The theory of human motivation is then employed to better understand a number of areas of importance to personality study, including an understanding of abnormal behavior in terms of the A-R-D (motivational) system and the present and potential roles of behavior therapy and behavior modification in dealing with personality problems.

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